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Paper TRADE JOURNAL

REG. U. S. PAT. OFF.

VOLUME 124, No. 15 APRIL 10, 1947

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CALENDAR OF COMING EVENTS

May 18-21, 1947—National Paper Box Association, Annual Convention, Hotel Traymore, Atlantic City, N. J.

May 22-24, 1947—American Pulp and Paper Mill Superintendents Association, Annual Convention, Edgewater Beach Hotel, Chicago.

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(NEWS ITEM: *Disposable paper iceboxes are being manufactured at the rate of 1,000 a day for shipping perishable merchandise.*)

Lobsters from Maine . . . orchids from Buenos Aires . . . and they traveled all the way in a paper icebox. A new throw-away container using dry ice refrigerant has been developed for shipping perishables by air, rail and truck. Lined with blanket insulation held in place by corrugated paperboard, this new portable icebox contains a metal-and-cardboard refrigeration unit that can be set to maintain temperatures from 50° F to –20° F. A waterproof bag placed inside the container holds the material being shipped.

Reprint of a 700-word article describing this new paper product is available for the asking.

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During the next few months Puseyjones equipment will go into production in North Carolina, Massachusetts, Florida, Georgia, New York and California, as well as in Mexico and Sweden.

Puseyjones Engineers will welcome the opportunity to work with you in solving production problems.

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Established 1848. Builders of Paper-Making Machinery
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Paper TRADE JOURNAL
REG. U. S. PAT. OFF.
VOL. 124, NO. 15 APRIL 10, 1947

N.P.T.A. Starts Study Of Handling Costs

NEW YORK—A national drive to reduce paper distribution costs for wholesale paper merchants has been opened here by the National Paper Trade Association, following the annual convention last week. E. Jay Huss, industrial engineer, has been engaged to carry out plans developed by their committee on operating efficiency.

The campaign represents the first effort to apply scientific motion study on an industry-wide scale to modern distribution of standard commodities, according to the paper merchants. Four elements will be embraced in individual studies, they said. These are (1) warehouse layouts, (2) equipment, (3) efficient use of manpower and (4) planning improvements.

Experts in the industry stressed that there are two major elements of cost which will be considered. These are, (1) cost of getting paper into the warehouse and in stock, and (2) costs of getting paper out of the warehouse and into the customer's stock.

Attention will focus on two factors in creation of profit stability. They are gross trading margins, and operating expenses. Rising wage rates, rents, power and light costs, warehouse maintenance expenses, and general overhead have forced them to concentrate attention on reduction of operating expenses, merchants declare.

Seventeen principles of efficiency in materials handling will be applied. These principles embrace among other points, the following objects of maximum interest: (1) minimize the amount of handling, and use gravity wherever possible, (2) provide continuous flow on definite routes of travel, (3) buy equipment for over-all savings, not first cost, (4) handle as large unit loads as are practicable, and (5) avoid empty-handed movements and use clear instructions for workers.

Warehouse layouts will be suggested by the industrial engineers to provide motion economy in both incoming and outgoing shipments. A system of handling unit loads is recommended to enable loads to be moved with a minimum of rehandling.

Magnolia Lines Up Timber

BAINBRIDGE, Ga.—Timber leases offered by the Magnolia Timber & Development Corporation, of New Orleans, are being accepted by numbers of timber growers in Decatur county. As noted, the leases are the first step in an attempt to secure for Bainbridge a large pulpwood paper mill, which, it is said, will be established here if sufficient pulpwood can be obtained. Leo Stacks has opened offices in Bainbridge for the Magnolia Timber & Development Corporation.

Wisconsin River Rises From Heavy Rainfall

WAUSAU, Wis.—Heavy rainfall last week-end brought a sharp rise in the Wisconsin river level and its tributaries. On April 4, the Wisconsin Public Service Corporation's west dam at Wausau was spilling four feet of water at one gate, and this dam and others of the company at Merrill and at Alexander dams were operating on a full load. This was also the case at Marathon Corporation's power dam at Rothschild. Rain continued to fall throughout Saturday.

Operators of the various hydroelectric plants on the Wisconsin river anticipated that most of the ice will disintegrate and that there will be no ice jam. Predictions at Brokaw were that the ice might not leave the channel there for another week.

Book Paper Publishers Elect

NEW YORK—At the annual meeting of the Book Paper Manufacturers Association, held at the Biltmore on April 3, George Olmsted, Jr., was re-elected chairman and P. H. Glatfelter was re-elected treasurer. Walter D. Fuller, president of the National Publishers Association, addressed the meeting regarding "The Future of the Publishing Business as It Relates to the Book Paper Industry."

Crittenton Talks at Kaukauna

KAUKAUNA, Wis.—L. A. Crittenton, of the speakers' staff of the National Association of Foremen, addressed the Thilco Foremen's Club of the Thilmany Pulp and Paper Company Monday evening, April 7. The topic of his talk was "The Lights Ahead are All Green."

Rise in Newsprint Profits Influences 1947 Prospects

TORONTO — Impressive increases in net profits for 1946 have been reported by newsprint companies operating in Canada. In many instances the improvement ranged between one and two hundred percent, with one or two revealing a growth of more than two hundred percent. However, newsprint companies are not the only ones showing handsome profits. Ever since the annual reports for 1946 started coming in, paper, food, steel, power and many other companies have been reporting sharply higher earnings for the year 1946. Producers of fine papers also all recorded pronounced increases, as did makers of pulp and paper products, but the results in these groups showed modest improvement in comparison with many of the newsprint firms.

The outlook for 1947 is regarded as substantially better than last year. Late in 1946 Canadian newsprint producers raised the price by $10 a ton and, should all producers follow the lead of International Paper, Abitibi Power and Paper, and Powell River Company and raise the price another $6 a ton, the industry stands to gain, for most of this year, $16 a ton on every ton produced.

This $16 a ton will not be all net gain, however, as some of it will go into actual and anticipated increased costs. Consolidated Paper made it clear to its shareholders that woodcutting operations just completed were more costly than had been originally estimated and that stumpage duties, rents, transportation, coal and other materials and equipment costs made the latest price increase necessary for the "maintenance of maximum supplies."

One other observation was made by the company. It was hoped the company would be able to contribute to newsprint stability by making the April 1st price firm until the end of 1947.

The new stumpage duties for companies operating in Quebec will average $1.45 to $2 a cord, which, in terms of costs in producing newsprint will add an additional 60 cents a ton, on the basis of 1.2 cords of pulpwood per ton of newsprint.

An increase in freight rates on Jan-

(Continued on page 24)

A. C. Ready Engineer For National Container

JACKSONVILLE, Fla. — Arthur G. Ready has joined the Kraft Pulp and Board Division of the National Container Corporation, as Mill Development Engineer to aid in the planning and developing of a further expansion program, and to follow through on the accomplishment of such a program if adopted.

Mr. Ready has had broad experience in the pulp and paper mill development field in the Southern States, acquired while with George F. Hardy, consulting engineer, and later with the St. Marys Kraft Corporation, and Rayonier, Incorporated.

With George F. Hardy, his first Southern work was at Moss Point, Mississippi, in 1924, then after a year in Everett, Washington, at the Everett Pulp and Paper Company mill. He returned to the South and spent several years at the Brown Paper Mill Company, Monroe, Louisiana.

After a year with the Robert Gair Company in their Northern mills he returned to the George F. Hardy organization in 1935 when the Union Bag and Paper Corporation mill construction started in Savannah.

In 1938 he went to Lufkin, Texas, on the construction of the Southland Paper Mills, Inc., the first newsprint mill using Southern pine. After the completion of the Southland Paper Mills, Inc., he was sent to St. Marys, Georgia, in 1940 to start the construction of the St. Marys Kraft Corporation's pulp and paper mill. At this time he left the George F. Hardy organization and joined the St. Marys Kraft Corporation as mill manager, supervising the construction and the early operations of the mill.

In 1943, he joined Rayonier, Incorporated, and was engaged in certain engineering assignments that took him to their several state of Washington mills as well as the mill at Fernandina, Florida.

In late 1944, he joined the Ciá Industrial de Antenquique, S. A. of Guadalajara, Jal, Mexico, to assist them in the selection and purchase of equipment for their kraft pulp and paper mill and the selection of the personnel for the initial operations and has recently returned from Mexico.

Mr. Ready was graduated from St. Johns College in 1917 receiving a B.S. degree in Civil Engineering.

Bowes Leaves Lily-Tulip

CHICAGO—Arthur S. Bowes has resigned as vice-president of the Lily-Tulip Cup Corporation and as president of the subsidiary Universal Paper Products Company of Chicago. Reports indicate that Bowes has as yet made no announcement as to his future plans and no word has come from the two companies as to who shall take over the latter's duties.

GEORGE W. PORTER

George W. Porter Opens Technical Sales Agency

MINNEAPOLIS — George W. Porter has resigned from the Minnesota and Ontario Paper Company to go into business for himself as a sales representative in the industrial field. Mr. Porter has opened an office at 517 Northwestern Bank Building and has organized the Technical Supply Company, of which he is president.

He represents, among other principals, The American Resinous Chemicals Corporation of Peabody, Massachusetts, and its subsidiary, General Plastics Corporation of Massachusetts. He also represents Schaar and Company of Chicago, a large distributor of laboratory equipment and supplies, scientific apparatus and reagent chemicals. Among his other accounts are the Wiley Alloy Tube Company of Chicago (stainless steel pipe, valves and fittings) and the Northern Water Treating Company of Minneapolis (water softening and filtering equipment). He will also handle the Walter Kidde Company line of fire extinguishers, as well as apparatus made by their subsidiary, the Youngstown Miller Company, for reclaiming used lubricating and transformer oils.

Mr. Porter is a member of the American Chemical Society, the Technical Association of the Pulp and Paper Industry, the Engineers Club of Minneapolis, the Industrial Chemists Forum, and the Minneapolis Chamber of Commerce. He has been with the Minnesota and Ontario Paper Company for the past six years and at the time of his resignation was Administrative Assistant to the Director of Research.

Mr. Porter states that he will make an announcement in the near future regarding the other personnel of the newly organized Technical Supply Company.

Robson and Laird Move Up in B-S-W

VANCOUVER, B. C.—With expansion of the activities of Bloedel, Stewart & Welch Limited, to include this summer the manufacture of sulphate pulp at the company's operations at Port Alberni, a reorganization of staff is being affected. Mr. C. Y. Robson, who was appointed resident manager at Port Alberni on January 1, 1946, is now relinquishing his direct interest in lumber sales to devote his entire time to the company's enlarged operation there. The sales policies affecting all the company's products will now be co-ordinated under Robert Laird as general sales manager.

In the appointment of Mr. Laird to his new position, it is pointed out that there will be no change in personnel handling the sales for the four divisions of the company. Frank Barry, formerly assistant sales manager of the lumber division, has been appointed sales manager, and will be resident at Port Alberni. Charles Plant will continue to look after sales for the shingle division, as well as his duties as manager of the Red Band Shingle Mill in Vancouver. Log sales will be handled as formerly by Mr. Laird. The Mead Sales Company has been appointed agent for sales in the United States for the Pulp Division, and Price & Pierce for pulp sales in the United Kingdom.

Mr. Robson, who was born in Ontario, moved to Vancouver at an early age. He attended school and university there, later taking a post-graduate course in business administration at Harvard. He joined the firm of Bloedel, Stewart & Welch Limited in 1924 as log scaler at Myrtle Point, and in 1934 was appointed sales manager for the lumber division, at Port Alberni. He has been closely associated with the Company during his entire business career.

Mr. Laird came to this Province from Prince Edward Island on his return from overseas service in the First Great War. He joined the firm of Bloedel, Stewart & Welch Limited as manager of log sales in 1929, and in 1934 took on the duties of general purchasing agent. In 1939 he was appointed secretary of the company.

Pesnel Retires from Behr-Manning

WATERVLIET, N. Y. — M. E. Pesnel has retired as comptroller and secretary of the Behr-Manning Corporation, after fifty years of service in the abrasive products industry. However, he will remain a member of the board of directors. He started as an office boy with the firm and was advanced to treasurer and board member at the Brooklyn plant. In 1928, when Behr-Manning was organized, he came to Watervliet where he was made comptroller and a member of the board of directors.

A TIRELESS "ARM" OF STEEL LETS HOT PIPE "ARCH ITS BACK"

● WHEN a big steam pipe system gets hot, it "grows" . . . often rising inches above its position when cold. This expansion would cause destructive strains, if crowded back into the system. The pipe must be allowed to rise.

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WHENEVER PIPING IS INVOLVED

Says Texas Gas Tax Threatens Lufkin

AUSTIN, Tex.—Ernest Kurth, president of Southland Paper Mills, predicted in an interview here April 3 that passage of the McLellan gas-tax bill would cause a shutdown of the Lufkin Paper Mills.

In an interview with the Dallas Morning News correspondent, Mr. Kurth asserted that Texas newspapers, already in bad shape because of the newsprint shortage from Canadian sources, would be further hurt by loss of paper manufactured in East Texas.

He opposed the bill that would tax gas-gathering lines as a measure that would hurt Texas consumers.

"We will be compelled to discontinue the manufacture of newsprint paper if the bill becomes a law," Kurth said.

He added that the proposed tax would require his company to pay out $11,000 monthly to meet the levy, that the burden could not be met. "We are in the middle of an expansion program so that we could more nearly meet the requirements of Texas newspapers," he continued, "and at present we are serving twenty-five. We will have our additional plant ready before long but should the gas-tax increase be enacted by the Legislature our entire mill will have to drop newsprint altogether and, instead, make high-grade products — stationery, for instance. Texas newspapers own about 17 percent of our stock.

"While sponsors of the tax measure think they are driving after exported gas they are in fact hitting at Texas consumers. We established the paper mill at Lufkin because we were able to get cheap fuel, but it will be out of the question should the tax be increased as in the bill. We had been intending to double our capacity. At present we have 700 employes but our expansion program calls for one thousand.

"The only advantage our plant has over our competitors, mostly Canadian producers, was the cheap gas for fuel."

Wholesale Paper Volume Holds High Level

WASHINGTON—Wholesalers' sales of paper and paper products totaled $16,876,000 for the two months of January and February, 1947, thirty-one percent above sales for the same months of 1946, according to the Bureau of Census last week, based on figures of 67 reporting firms.

February sales were $7,614,000, a decline of 10 percent from January, but 28 percent above sales in February, 1946. Inventories in February, 1947, gained 1 percent over January, and were 29 percent over those for February last year.

Milk Containers for Midwest

MAYWOOD, Ill. — The local plant of the American Can Company, designed to produce approximately 200,000,000 fibre milk containers annually, will get into full production by late summer, according to information released by the company. Four container-making production lines have been perfected to insure a production sufficient to supply demand in the Chicago and middle western territory.

Marathon's Old Timers Has 386 Active Members

WAUSAU, Wis. — The Quarter Century Club of Marathon Corporation at its annual meeting recently heard Leo Croy of Neenah, executive vice-president of the corporation, describe recent developments affecting the Wausau and Rothschild plants.

Twenty-four employes who reached 25 years of service with the company within the last year were guests of honor. The club now has 386 members, more than 10 percent of the company's 3,700 employes. Some have up to 45 years of service.

Mr. Croy assured his listeners that Wausau and Rothschild always will be an essential part of the business. He said that the supply of pulpwood obtainable in Wisconsin and Michigan would not provide for the needs of the various plants, and that Marathon therefore turntd to Canada.

Nearly 450 persons heard Mr. Croy's address. Roy H. Kelly, resident manager of the Rothschild division, presented watches to the 24 new members of the club. Mr. Kelly was toastmaster. A. F. Bauman, personnel manager of the Rothschild division, was in charge of arrangements for the dinner meeting.

Workers District Council Will Meet at Kaukauna

KAUKAUNA, Wis. — Delegates from Wisconsin, Minnesota and upper Michigan pulp and paper mills will attend the Tri-State District Council of the Pulp, Sulphite and Papermill Workers starting at 8:30 Sunday morning, April 27, in the Kaukauna high school auditorium.

George Gerrits is general chairman of the council. The committee on arrangements includes Jewell Toms, Walter Hartzheim and Clarence Kastell, all of the International Brotherhood of Pulp, Sulphite and Papermill Workers, Local No. 147, at the Thilmany Pulp and Paper Company mill; Henry Siebers, of the Pulp, Sulphite and Papermill Workers, Local No. 298, at the Badger Tissue Mills; Ed Knapp, of the Pulp, Sulphite and Papermill Workers, Local No. 144, at the Combined Locks Paper Company; Ernest Buetow, of the International Brotherhood of Paper Mill Workers, Local No. 20, of the Thilmany mill; and Cornelius Huep, of the International Brotherhood of Pulp Mill Workers, Combined Locks, Local No. 264.

Delegates will register from noon Saturday, April 26, until 8:30 the following morning at Hotel Kaukauna.

Wage Rates Rise In The Mohawk Valley

COHOES, N. Y.—Further increases in wages were promulgated by several mills in the Mohawk Valley during the past week following efforts of labor organizers. Many of the mills are running with day and night shifts and general conditions are reported satisfactory.

Several hundred employes of the West Virginia Pulp & Paper Co., Mechanicville, have received a wage advance of eight cents an hour following negotiations, the fourth since V-J day, bringing the total postwar increase to about 30 cents hourly. The new scale is retroactive to March 17. Officials of the firm estimate that the latest increase will bring the payroll at the plant to an annual figure of about three million dollars. It was stated that it is the traditional policy of the firm to have wage rates equal to, or above, those of competitors in the industry. Operations at the plant are being maintained at a near capacity basis with orders booked far ahead.

F. C. Huyck & Sons, Rensselaer, has signed a new wage contract which grants an annual increase of approximately $200 to about 1,100 employes. The increase, effective this week, averages slightly more than nine cents an hour for all hourly workers. Total increases during the year for all union employes, combined with the advance of six cents granted last fall, amounted to about fifteen cents. The new contract followed several conferences between officials of the company and representatives of labor organizations. It was also stated that a schedule of 37½ hours weekly has been placed in effect in the office department. An upward revision in pay averaging about $2 weekly is also granted in addition to normal earned increments prescribed under the merit rating plan in effect since March, 1946. Cafeteria personnel receives an increase of $4 a week with no change in hours from the regular week of 40 hours.

Charlotte Paper Men Organize Local Club

CHARLOTTE, N. C.—Paper merchant salesmen and other paper men here have organized a club to promote fellowship, high ethics, and general understanding among paper salesmen. Charlotte's growth as a paper center has long ago attracted national attention. The new club will give attention to fostering the welfare of paper distributors and paper distribution.

E. B. Spencer of Dillard Paper Company is president; F. G. McNeil of McNeil Paper Company is vice-president, and Frank A. Miller of Caskie Paper Company is secretary-treasurer. Paper mill men visiting Charlotte on meeting dates are urged to attend the luncheon meetings which are held at noon on the first and third Friday of each month.

America's versatile paper manufacturer, **THE MEAD CORPORATION**, is successfully meeting the steady demand for new *functional* papers. To produce papers that will solve the growing variety of packaging problems requires unusual paper making experience, painstaking research and ingenious processing machinery for such operations as coating, combining, treating and the like.

The part played by **WALDRON MACHINES** in the production of **MEAD PAPERS** affords ample proof of their ability to produce results in keeping with the high quality standards maintained by such leading manufacturers and converters.

Whatever your paper processing problem, investigate the possibilities of using **WALDRON** Machines like the **WALDRON** Reverse Roll Coater and Laminator illustrated above, one of many types available. A century and more of machine building experience is at your service.

Coating Machines
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Dr. Sproull to Head New Research Group

BIRMINGHAM, Ala. — Southern Research Institute has placed Dr. Reavis C. Sproull in charge of a new research group on wood, pulp, and paper technology. In recognition of the new product possibilities of the South's extensive forest resources, the Institute is expanding its research facilities and service to industry to include work on specialty pulps and papers, high wet strength papers, packaging materials, saturating papers for lamination, and coated paper products suitable for use in the food industry. In the field of wood technology, investigations already under way include the utilization of wood wastes, and the development of new methods for treating wood to improve dimensional stability, resistance to decay, and mechanical wearing properties.

Dr. Sproull is a native of Georgia and a graduate of New York University. Before joining the staff of Southern Research Institute he was in charge of a research and development group of the General Electric Company at Pittsfield, Massachusetts, where he was instrumental in perfecting new pulp, paper, and textile materials used in the construction of transformers, voltage regulators, capacitors, and insulated conductors. During the war Dr. Sproull was local chairman of the committee for overseas packaging and a member of A.S.T.M. Committee D-6. At Pittsfield he was also a member of the Interworks Committee on Fungicides and on Insulating Papers.

Dr. Sproull is a member of Kappa Phi Kappa, Kappa Alpha, Phi Lambda Upsilon, the American Chemical Society, the Technical Association of the Pulp and Paper Industry, the American Association for the Advancement of Science, and the Chemists' and Advertising Clubs of New York.

Wisconsin Editors Will Visit Kimberly-Clark

MENASHA, Wis. — About 50 editors of Wisconsin industrial publications will hold a two-day regional conference of the Editors Association of Wisconsin here April 17 and 18. The conference will open at noon on April 17 with registration at Hotel Menasha. In the afternoon the vititors will be conducted on a tour of the Kimberly, Wis., mill of Kimberly-Clark Corporation, where they will watch the manufacture of magazine and book papers. After the tour there will be a reception at North Shore Golf Club in honor of the new officers of the association and a dinner at the club.

Representatives of non-member firms have been invited to attend. Arrangements for the meetings are being made by P. R. Rundquist of Marathon Corporation, Menasha, and James Shattuck, Kimberly-Clark Corporation, Neenah.

REAVIS C. SPROULL

Chicago Short on Kraft And Low Grade Sulphites

CHICAGO—There continues to be no doubt but that the paper consuming interests in Chicago could use up about all the paper that the trade could give it right now. Among the items most in demand and reportedly the worst from a supply standpoint are the lower grades of sulphites which have heretofore been the leader for many a job in this area. There is some feeling here that any efforts to hold these lines off the market in favor of higher grades at higher prices would prove a mistake. The theory of "pricing oneself out of a market," can, according to local reports, be applied to that condition where certain classes of paper are absent so long that substitutes finally win over buyers.

The kraft industry also reports continued shortages and some reports indicate an impatience on the part of buyers that quality has not been improved before this time. Most of the kraft trade is said to be doing its level best to produce the highest in quality and at the most favorable prices possible. There are, it is reported, some who are definitely taking advantage of the situation.

Buffum Mills Take License To De-Ink Newsprint

BUFFALO, N. Y.—Exclusive rights to a process to make newsprint out of reclaimed old newspapers, known as the "Sterling Process," have been sold by the American Industrial Company, to Buffum & Company, Chicago papermill owners and operators, President F. B. Oldham of the Buffalo company announced.

President Frank Buffam of the Chicago company said that equipment to make newsprint by this process will be installed in company mills in New York and Pennsylvania.

Prouty Returns From Tour of Inspection

PHILADELPHIA — Retail sales manager D. A. Prouty, of Scott Paper Company, has just returned to Chester after completing a tour of distrticts in the Chicago, St. Louis, Dallas and Southern retail divisions. On this trip, which he started after the Chicago sales meetings, Mr. Prouty was interested in observing stock conditions in all types of outlets and in studying the progress of the latest Scott Store Advisory Service contributions, the paper department and dry grocery fixtures which the company has designed for the grocers of America.

Throughout the cities he visited, Prouty noticed shortage of sanitary paper products, particularly toilet tissue and towels. In spite of this shortage, practically all Scott customers feel that the company has done an outstanding job in allocating its brands during the critical period.

"The men in the sales force are to be congratulated," said Mr. Prouty, "on doing an excellent job under very tough conditions. The good will which they have built with our customers has paved the way for substantial gains in sales in the future."

The "Idea to Share" program, Scott's Store Advisory Service feature, is making headway throughout the middle west and south, according to Prouty's observations. Working with many of Scott's men in these markets, he was of the opinion that this program is the greatest good will builder the company has developed in its business to date. The reaction was one hundred percent favorable.

"There are thousands of merchants who are remodeling their stores or who are planning to do so and this program is ready for them. They like our plans because they are way ahead of anything else. They like us because we are helping them to solve a difficult problem, one that will affect their future success as purveyors of grocery products to American householders."

In addition to Manager Prouty, other Chester representatives have visited the men in the field recently. Vice-president Francis Plowman, advertising manager Harry Pardee, assistant advertising manager G. A. Duff, sales personnel manager Dave Preston, distribution research manager John McKirdy and Joe Finnerty have worked with the men in several districts, bringing back reports of outstanding progress.

Rowley Joins Wood Flong

HOOSICK FALLS, N. Y. — Albert W. Rowley, until recently industrial engineer with the Kelly-Springfield Co., of Cumberland, Md., has become connected with the Wood Flong Corporation in a similar capacity.

HEPPENSTALL E. I. S. KNIVES CUT CHIP COSTS 3 WAYS

Heppenstall Chipper Knives produce *more* chips at *lower* costs because:

1

They operate more hours between grinds . . . Manufactured from special analysis, electric-induction steel, Heppenstall Knives are built for rugged, heavy duty service. They withstand heavy feeds and cuts in high heat, yet hold their keen edges longer.

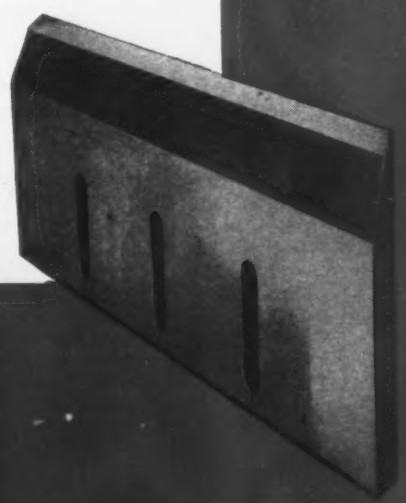
2

They take more grinds per knife . . . Quality steel, correct design, and precision finishing result in longer useful service life. Chipper "down-time" for knife maintenance is held to a minimum.

3

They give greater yield and uniformly high-quality pulp . . .. Retaining their keen edges during long runs, Heppenstall Knives cut cleanly and reduce logs to easily digested chips—with fewer oversize chips and little sawdust waste.

If you are seeking lower chip costs, investigate the advantages of Heppenstall E. I. S. Chipper Knives. Heppenstall Company, Pittsburgh 1, Pennsylvania.



Marinette Mill Wins Scott Safety Award

MENOMINEE, Mich.—About 80 Marinette Paper company supervisors, safety committee members and guests attended the company's annual safety banquet in Hotel Marinette last week. D. B. Wilkinson, general manager, complimented the group on their safety record of the past two years, when they led all the other plants in the Scott organization in accident infrequency.

Harrison F. Dunning, recently appointed general manager of all paper mills of the Scott Paper company, stressed the importance of safety to the individual. James Conaway, safety manager of Scott's Chester, Pa., plant, presented the local plant with a plaque for attaining the lowest accident frequency of all the Scott plants during 1946. This frequency of 3.98 accidents per million man hours worked—is the lowest recorded in the inter-plant contest since it started in 1944.

Gordon Lemke of the Employers Mutual Insurance company also presented the Marinette mill with an award for winning the 1945-46 safety contest sponsored by his company. C. R. Kronquist and William Arts accepted the awards.

An old fashioned girls' quartette composed of Rita Plante, Marion Anderson, Eleanore Stevenson and Elsie Landenberger accompanied by Kay Hornick sang several safety numbers. A humorous safety skit was presented by Paul Doran, Jake Lannoye, Harold Hoare, Joseph O'Connor, George Schoener, Robert Blunden, Edward Rynning and Lawrence Kuntz. John McNichol sang a solo, "When Irish Eyes Are Smiling" accompanied by Dr. C. H. Boren, James Conaway closed the program with magic tricks.

Einar T. Martenson, Safety Supervisor of Marinette Paper company acted as toastmaster. Dinner music was provided by William Brukardt.

Visitors from other Scott plants, in addition to Dunning and Conaway were: John McNichol and Joseph Quinn from Chester, Pa., Francis Boylan of Fort Edward, N. Y. and A. T. Kuehn of Hoboken, N. J.

Union Bag Earnings Running Ahead of Last Year Showing

NEW YORK—Earnings of Union Bag & Paper Corporation in the first quarter of 1947 were between $2.10 and $2.15 a share, Alexander Calder, president, told the annual meeting of stockholders. This is approximately half of the whole year's earnings for 1946.

Mr. Calder stated that the new paper machine and the plant for the manufacture of corrugated shipping containers probably would come into production next September. Shortage of materials, notably steel, he pointed out had delayed progress in construction.

Bagley & Sewall Grant Seven-Cent Wage Hike

WATERTOWN, N. Y.—General wage increases of seven cents hourly have been won by an estimated 600 employes of the Bagley & Sewall company, manufacturer of paper mill machinery, in this city. Contracts for the seven-cent increase have been negotiated by Lodge 355, International Association of Machinists, and by Local 400, International Moulders and Foundry Workers. The increase is retroactive to Feb. 3.

The top rate for skilled machinists under the new pay pattern will be $1.36 per hour. Although the starting rating for unskilled labor remain at 75 cents per hour, it is stipulated that it must be automatically advanced to 82 cents per hour at the end of a 30-day probationary period, or the man shall be dropped from the payroll.

United Paperboard Buys Lowman Folding Box

SYRACUSE, N. Y.—The Lowman Folding Box Corporation, has been purchased by the United Paperboard Company. The Lowman company becomes a wholly owned subsidiary of United and M. E. Lowman, its president, will remain with the new interests as general manager. Lowman has 70,000 square feet of manufacturing space in several buildings on a plant site of nearly three acres. The concern has been doing about $1,500,000 business a year and has 160 employes.

Mr. Lowman founded the business 20 years ago, buying out the folding box department of Schmeer's Paper Box Company and setting it up in another plant.

Luella Thayer Elected By U. S. Envelope Company

SPRINGFIELD, Mass.—Miss Luella M. Thayer of Longmeadow has joined the select group of women in the nation who are top officers of large corporations when she was elected secretary of the United States Envelope Company. She previously had been assistant secretary. In her new office she succeeds the late James Weir.

The organization meeting of the envelope company directors also named Ernest M. Whitcomb, president of the First National Bank of Amherst, as chairman of the board to succeed the late Willard E. Swift and it designated as the president and chief executive officer Eldon V. Johnson of West Granby, Conn.

Whitcomb, who has been director of the company for many years, also was named to the executive committee of the board with Joseph S. Fairchild, vice-president in charge of Pacific Coast operations, to service with Johnson and Magnus F. Peterson, treasurer of the company, who were reappointed.

Johnson succeeds Swift as chairman of the executive committee.

Camp-Betner Plans Enlarged Output

RICHMOND, Va.—The Benj. C. Betner Company former James River division has been succeeded by a new corporation, the Camp-Betner Corporation. This corporation was formed by the Benj. C. Betner Company of Devon, Pa., and the Camp Manufacturing Company of Franklin, Va. Arthur B. Collins, former manager of the James River division, is president of the new corporation and will continue as its manager. The products of the Corporation will be sold by the Benj. C. Betner Company of Devon.

The James River Division manufactured primarily large kraft shipping containers and heat seal specialty bags made from glassine. The new corporation plans to expand its production along the lines of large functional shipping containers and large heat seal bags, using primarily natural kraft such as produced by the Camp Manufacturing Company at Franklin, and continue the use of special glassines from our present group of suppliers.

Plans are now under way for additions to plant and equipment, and although no new products are planned for production, it is expected that the trend will be toward more functional use of papers such as natural kraft and glassine. It is hoped that by the formation of the new corporation and the ensuing availability of natural kraft that the customers of the Benj. C. Betner Company will be benefited and that the increased demands for the products above mentioned can be met.

Blank Book Old Timers To Hold Reunion

HOLYOKE, Mass.—The Old Timers club of the National Blank Book Company will hold its annual reunion supper and election of officers on April 19. Company officials, retired club members and salesmen have been invited to attend.

New members will be initiated and special tribute will be paid to three members who have reached their 50th year of service with National Blank Book, making a total of 12 members in the 50-year class.

Membership to date is 265 male employes who have worked 15 years or more with National. Present officers are: president, Edward Donahue; vice-president, Roland F. Peltire; treasurer, John T. Popp; secretary, Alfred St. John.

Parsons Starts Addition

HOLYOKE, Mass.—A permit has been taken out at the city engineer's office by the Parsons Paper Company of Holyoke to build an addition on its paper-making building. The work will cost $100,000.

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COSTS LESS THAN SOAP!

For years the price of NACCONOL NR has gone steadily downward. Today it costs two-thirds less than in 1932! You will continue to benefit by our greater production and technology.

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Functions efficiently in acid or alkaline, hot or cold solutions; in hard water; or with metal salts, oxidizing or reducing agents. Combines washing, wetting, emulsifying, dispersing in one economical synthetic detergent.

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FINANCE

Consolidated Billing Rises 41 Per Cent

MONTREAL — Tonnage of pulp and paper products shipped by Consolidated Paper Corporation in 1946 was 20 percent above 1945, and billings on all products, including lumber, showed a rise of 41 percent, L. J. Belnap, president, told stockholders in the annual report, issued late last week. The higher billings, he said, were due to increased production and selling prices.

"Materials and supplies again increased in cost and still continued to be difficult to obtain," Mr. Belnap declared, describing 1946 operations: "Wage rates were increased during the year.

"In order to produce sufficient pulpwood on a sustained yield basis for the increased manufacturing operations it was necessary to open more forest districts, including the Island of Anticosti."

For 1946 the company showed net profit of $4,859,163, equal to $1.90 a common share, compared with $1,788,752, or 70c a common share in 1945.

The 1946 net profit was after deduction for depreciation of $4,719,588.

Included in the 1946 net profit was a net amount of $1,402,912 realized from foreign exchange before July 5, 1946, when Canadian dollars were put on a par with United States dollars.

Capital expenditures during the year totaled $2,477,806, and as of Dec. 31, last, appropriations for capital expenditures uncompleted amounted to $4,193,598.

"While some progress has been made on deferred maintenance and capital expenditures for replacement and modernization of plant, work was greatly retarded in 1946 by the continued shortage of manpower, technical staff, machinery and material," Mr. Belnap said.

Inventories as of December 31, last, were $22,501,370, compared with $15,218,798 a year earlier.

Scott Liberalizes Plan for Employe Stock Ownership

CHESTER, Pa.—The Employe No Par Value Common Share Offer for 1947 has been made available to the people of Scott Paper Company, Marinette Paper Company and Coos Bay Pulp Corporation. This year the plan has been liberalized in several ways. The company's contribution is being increased to 20 percent of each member's weekly deposit up to $10 per week. Last year, the company's contribution was 15 percent. The company will also contribute 10 percent of each member's weekly deposit in excess of $10 per week.

Subscriptions this year may be made for any amount up to a full 15 percent of weekly earnings. The right is reserved to reject all or any portion of subscriptions in excess of $10 per week in the event that the total amount of subscriptions received exceeds $300,000 which is the maximum amount offered. The Plan this year will operate for a maximum of 37 weeks, beginning March 14 and ending the last Saturday of November.

Nekoosa-Edwards Hits All-Time High Record

PORT EDWARDS, Wis. — Nekoosa-Edwards Paper Company last week reported net income of $1,023,130 in 1946, equivalent to $3.25 a common share on 315,000 shares outstanding, as compared to $421,153, or $1.34 a common share on the 252,000 shares outstanding in 1945.

John E. Alexander, president, said that fortunately reconversion in the paper industry was "primarily technical and did not involve a complete change of products."

Sales reached an all-time high of $13,081,487, an increase of 15 percent from the 1945 figure of $11,351,659. Tonnage sales increased to 82,440 in 1946 from 77,678 in 1945.

Working capital at December 31 amounted to $5,989,819, an increase of $1,786,868, from the $4,202,951 total at the end of 1945.

In 1946 demand for paper and paper products exceeded supply to such an extent that "our principal sales problem in 1946 was to distribute our products equitably to our customers," he declared.

A recession in 1947 "should not materially affect the paper industry as long as the supply of paper remains short," he said. "We anticipate the demand for paper will continue throughout 1947."

Badger Hourly Wage Up

MARINETTE, Wis. — A 5-cent hourly wage increase has been granted to all employes of the Badger Paper Mills, Inc., Peshtigo, effective March 24, according to Walter Adrian, secretary-treasurer of the company. This makes the base pay $1 per hour for men and 89 cents for women.

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending April 5, 1947

STOCKS

	High	Low	Last
A. P. W.	5⅜	5⅜	5⅜
Armstrong Cork Co.	50	49	49½
Armstrong Cork Co., pf.	105½	104½	104½
Celotex Corp.	30	29¼	29⅜
Celotex Corp., pf.	....	....	....
Certain-Teed Products Corp.	17⅝	17	17
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	23¼	22⅜	22¾
Champion Paper & Fibre Co., pf.	110½	110	110½
Congoleum Nairn Co.	27⅜	27	27
Container Corp. of America	44⅜	43¼	44¼
Crown Zellerbach Co.	28⅜	27⅞	28¼
Crown Zellerbach Co., pf. 4.20	107	106⅜	107
Crown Zellerbach Co., 4 pf. 4	117	114¼	114¼
Dixie Cup Co.	31¼	30¼	31
Dixie Cup Co. A	54	53½	54
Flintkote Co.	32⅞	31¼	31¼
Flintkote Co., pf.	108	107⅛	107⅛
Robert Gair	7⅛	6⅞	6⅞
Robert Gair, pf.	20⅝	20½	20⅝
International Paper Co.	48½	46½	47
International Paper Co., pf.	103¾	103⅜	103⅜
Johns Manville Corp.	125⅝	122	122½
Johns Manville Corp., pf.	117½	117½	117½
Kimberly-Clark Corp.	25½	24½	24⅝
Kimberly-Clark Corp., pf.	109½	108½	109½
Mac Andrews & Forbes	37½	37½	37½
Mac Andrews & Forbes, pf.	....	....	....
Marathon Corp.	25⅝	24¾	25
Mead Corp.	22½	21⅝	22⅛
Mead Corp., pf. 4¼	103	103	103
Mead Corp., pf. 2	49¼	48½	49¼
National Container Corp.	39⅞	39⅜	39¼
Paraffine Companies, Inc.	....	....	....
Paraffine Companies, Inc., pf.	108¼	108¼	108¼
Rayonier, Inc.	23⅜	22	22⅞
Rayonier, Inc., pf.	37⅜	36¾	36¾
Ruberoid Co.	52	51	52
Scott Paper Co.	42⅞	41⅞	42½
Scott Paper Co., pf.	100	99¼	99¼
Sutherland Paper Co.	44	42	42
Union Bag & Paper Corp.	32⅝	31⅜	32½
United Paperboard Co.	17	16½	16½
U. S. Gypsum Co.	102	100	100
U. S. Gypsum Co., pf.	194½	194½	194½
West Virginia Pulp & Paper Co.	42	40⅜	40⅜
West Virginia Pulp & Paper Co., pf.	113	113	113

BONDS

Abitibi Pulp & Paper Co., 5s '53	....	....	....
Celotex Corp. 3¼s '60	104¼	104¼	104¼
Certain-Teed Products Corp. 5½s '53	....	....	....
Champion Paper & Fibre Co. 3s '65	102¾	102¾	102¾
Mead Corp. 3s '66	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending April 5, 1947

STOCKS

	High	Low	Last
Great Northern Paper Co.	42½	42½	42½
Hummel Ross Fibre Corp.	31¼	30⅛	30⅛
St. Regis Paper Co.	9⅜	9	9⅛
Taggart Corp.	9	9	9

BONDS

American Writing Paper Co. 6s '61	....	....	....

ADAMS AUTOMATIC WATER FILTERS

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PORO-SCREEN Filters are a practical method for filtering water direct from the river or other source. Removes sand and grit 15 times finer than 1/32". Delivers a large volume of filtered water suitable for general mill service in the processing of newsprint, box board and other coarse grades of paper stock.

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PORO-STONE Filters provide effective filtration for water required in high grade paper stock. Installed following sand filter equipment, the PORO-STONE Filter eliminates finest sand, pipe scale and all foreign matter which might impair paper quality.

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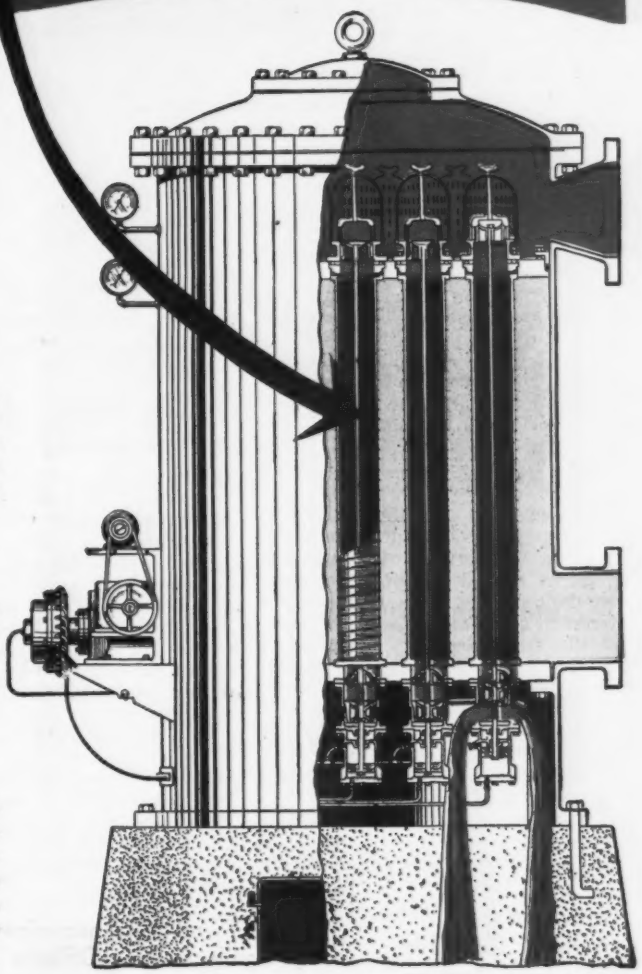

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ADAMS PORO-STONE AND PORO SCREEN FILTERS

Mead Trebles Net In Its Best Year

CHILLICOTHE, O.—The Mead Corporation's one hundredth year was its best from the standpoint of production and sales. Sales in 1946 totaled $53,429,125.26, a gain of $12,571,744.54 over the preceding year, the report stated, and represented the income from 494,251 tons of products. Net earnings after all taxes totaled $3,449,307.85, equivalent to $4.22 per share on the 707,424 shares of common stock. Last year's earnings were $1,190,646.17.

"The increase in earnings, while gratifying, still represents only a modest profit on the turnover, amounting to 6.5 percent," the report stated.

President Sydney Ferguson said the increased sales were due to moderately higher prices, to greater production and to the inclusion for the first time of the sales of Columbian Paper Company. The latter has mills at Buena Vista and Bristol, Va., and has been operated as a Mead subsidiary since April 16, 1946.

The corporation undertook a major financial program during the year. The proceeds of the profits were used to retire the then outstanding $8,000,000 principal amount of three and one-eighth percent first mortgage bonds and to retire the unexchanged $6 cumulative preferred stock, series A, and $5.50 cumulative preferred stock, series B.

The remaining sum of $6,787,946.96 has been and is being used to reimburse the corporation for amounts heretofore applied toward and to complete the financing of the corporation's interest in the Macon Kraft Company, and the remainder for enlargements and improvements of present plants. This includes improvements and modernization of the existing pulp mill facilities at Kingsport and Chillicothe, improvements at Escanaba and Manistique and other enlargements and improvements at North Leominster, Mass., Sylva, N. C., Harriman, Tenn., and Lynchburg, Va.

An annual meeting for the election of directors will be held in Dayton on April 29.

Millwrights Consider Double-time Demand

HOLYOKE, Mass. — Edward Moore, organizer for the International Brotherhood of Papermakers (AFL) reports that 140 paper millwrights met recently to draw up plans for coming negotiations with management. He denied that an action had been taken by the group to form a union independent of Paper Mill Workers Union, local 22, with which they are now associated.

It had been reported earlier that the group was to form an independent union. Moore said that one demand discussed by the millwrights was double time for hours worked over 40, as against the present schedule which calls for time and one-half for over 40 hours plus double time for Sunday. The present contract expires on June 1.

Stone Container 1946 Profits Sales Set All-Time High

FRANKLIN, Ohio — The Stone Container Corporation, manufacturers of paperboard boxes, reported an all-time high in sales and profits during 1946, according to Norman H. Stone, president and chairman of the board. Stone announced to the stockholders a net income amounting to $1,321,281 with net sales of $9,832,739, a material increase over 1945. Working capital increased $727,306 in 1946 to a current total of $1,314,688, while inventories amounted to $1,007,076 as the year closed. As part of the company's program designed to make it independent of outside sources of paper board supplies, the Stone Container Corporation has purchased the assets of the Coshocton Straw Paper Company of Coshocton, Ohio, and the Franklin Board & Paper Company of Franklin, Ohio. The two mills, it is reported, will produce a majority of total annual supply of paperboard used by the company during 1947.

Baldwin Conducts Class In Paper Making

NEW YORK — For the past several years Baldwin Paper Company, Inc., has been conducting for members of its own organization, not directly connected with selling, a weekly class studying the general fundamentals of paper making -- from tree to trade. This year Baldwin has widened this worthwhile activity and opened the class to anyone in the graphic arts industry who would like to take a brief refresher course in paper making.

The Baldwin Paper Class, under the direction of Bernie Blausen, vice-president, meets very Thursday from 12:30 to 1 p.m. at the Baldwin offices, 233 Spring Street. A limited number of serious students will be gladly welcomed—just phone Miss Kay for details.

Swedish Transmarine Union Elects New Officers

GOTHENSBURG — New officers of the Swedish Transmarine Union were elected at the annual meeting on March 27. President is Lennart Larsson (AB The Swedish Trading Co., Stockholm); vice-president and chairman of the board of directors of the Gothenburg section, Jan Liebig (H. Reeve Angel & Co., AB, Gothenburg). Other officers are: Arne Waern (AB C. Fr. Waern & Co., Gothenburg), Otto Bengtsson (AB Hedström & Co., Gothenburg), Martin Thurne (Leje & Thurne AB, Stockholm) and Torsten Andell (Kjellbergs Successors AB, Stockholm).

Great Northern Hit Production Peak

BOSTON — Great Northern Paper Company operated its plants at capacity in 1946 and produced 349,000 tons of newsprint and specialty papers, more than in any previous year, William O. McKay, president, told stockholders in the annual report, issued yesterday. At the close of the year, paper supply was still running behind demand. "Every effort is being made to maintain production at maximum capacity," Mr. McKay said. Pulpwood operations and purchases have provided sufficient wood for consumption and a moderate addition to inventory, which was depleted during the war period, he added.

For the year 1946, the company reported net profit of $2,591,336, equal to $2.59 a common share, compared with $902,710 or 90c a common share in 1945.

Earnings for 1946 do not reflect the excess net cost of replacement of a portion of the depleted base period inventory of pulpwood under the "involuntary liquidation" provision of the tax laws, the report said. Adjustments on this account were made by deducting from surplus an amount of $226,953 representing excess of cost of replacement over original cost of pulpwood inventories valued on a "last in, first out" basis and involuntarily liquidated in 1944 and 1945, less a claim of $151,302 for refund of the applicable portion of Federal income taxes already paid.

The company had no funded indebtedness or bank loans outstanding at any time during the year, Mr. McKay said.

A payment of $318,719 was made on account of a 1945 timberland purchase, and a balance of $956,158 remains to be paid in 1947 and the two succeeding years under terms of the purchase. Except for current liabilities, this was the only obligation of the company at the end of 1946.

The company produces practically all the power it uses, installed rated capacity of hydraulic and hydro-electric developments totaling 112,000 horse power.

"During the period just before the war, a new hydro-electric power completion of this development three of six older paper machines at the Millinocket mill were replaced with machines of higher capacity," said Mr. McKay.

"This program was interrupted during the war, but plans have been under consideration for the replacement of the three remaining older paper machines, and for a considerable amount of essential maintenance work, when equipment and materials shall become available."

Inventories as of December 31 last totaled $8,395,884, compared with $6,729,074 a year earlier.

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B. C. Accelerates Its Forestry Operations

VANCOUVER, B. C. — Reforestation operations of the British Columbia Forest Service for the 1947 season are now in full swing.

Because of lack of labor last year and the previous year, plantings were small and trees being planted this year are three-year-old Douglas fir with a few western red cedar.

Next year the forest service's expanded program calls for planting of 20,000,000 trees.

About 170 men are planting trees in three districts of Vancouver Island. A total of over three million trees will be planted.

Plantings are now underway at Loveland Lake, near Campbell River, Horne Lake, north of Qualicum and Timberland, between Nanaimo and Ladysmith.

Reforestation this year by private industry is small because of the heavy expense of planting three-year old trees rather than two-year old seedlings. Small plantings are being made by Comox Logging and Railway Company and B. C. Forest Products Ltd.

While two-year old trees are preferred for planting, the survival rate of three-year old trees is just slightly less than for the young seedlings, B. C. Forest Service experts report. To determine the survival rate for three-year olds, they conducted an investigation on previous plantings last fall.

Three-year old trees cost much more to plant. The cost of raising them from the nurseries, the cost of transporting them to the reforestation areas and the actual cost of planting is greater because the trees are larger. In nurseries of the B. C. Forest Service now there are almost 20,000,000 young Douglas fir and western red cedar trees which will be ready for transplanting as two-year olds next year at this time.

Watertown Plants Expect Visitors from France

WATERTOWN, N. Y.—Ten paper manufacturers from France, who will make a tour of industrial plants in the United States this summer, will be in Watertown on May 9 and 10 to inspect local factories, it was announced by A. T. Matthews, chamber of commerce president.

The French manufacturers will travel in a special coach and during their two-day stay in Watertown they will be the guests of the industrial committee of the chamber, headed by R. H. Fisher, chairman. It is planned to have a dinner meeting in honor of the visiting European industrialists.

On their tour of this section the French manufacturers will visit Bagley & Sewall company, Knowlton Brothers, Taggarts and the St. Regis paper company in Deferiet.

OBITUARY

George Carruthers

TORONTO—George Carruthers, president and general manager of the Interlake Tissue Mills Company, died April 1, in his home here at the age of 78 after a long illness. He was a past president of the Canadian Pulp and Paper Association and for thirteen years chairman of the Canadian Technical Service Council. Recently he completed a volume on the history of pulp and paper manufacturing.

Born in Avening, Ont., he served apprenticeship as a machinist in Buffalo, returning to Canada in 1899. After 1911 he organized the Interlake concern.

Almost from its inception Mr. Carruthers was chairman of the Joint Textbook Committee of the Pulp and Paper Industry and took a tremendous interest in the financing of the McGraw-Hill textbooks on "The Manufacture of Pulp and Paper."

The Interlake Tissue Mills of Merritton, Ontario, has been a corporate member of the Technical Association of the Pulp and Paper Industry for many years. Through these means Mr. Carruthers found an opportunity to contribute his help to TAPPI, an organization that interested him very much. He attended a number of the TAPPI annual conventions.

Although poor health prevented him from travelling much in recent years he proceeded with a constructive hobby, the preparation of "The History of the Pulp and Paper Industry of Canada." Although this has not yet been published it is to be hoped that his heirs and associates will do so as a memorial to a truly great Canadian industrial statesman.

Charles Henry Burr

EAST MILLINOCKET, Me.—Charles Henry Burr, Superintendent of the Great Northern Paper Company's East Millinocket plant, died at his home on Saturday, March 29th. Mr. Burr was born December 14, 1872, at Tweed, Ontario. He entered the paper industry at an early age, and worked in several northern New York mills, including the Remington Paper Mill and the Victoria Paper Company at Watertown, and the International mills at Fulton, Herkimer, South Glens Falls and Palmers Falls. He became connected with the Great Northern Paper Company in 1914, as Superintendent of its Madison mill, and since 1918 has been superintendent at East Millinocket.

He is survived by his widow, three daughters, two sons, a sister and a brother.

Erik A. Thomee

NEW YORK — Erik A. Thomee, vice-president of the Bulkley-Dunton Pulp Company, died on March 31, 1947. Mr. Thomee, aged 51 years, was stricken with cerebral hemorrhage in his home early in the morning, and died in the Greenwich, Conn., hospital a few hours later without regaining consciousness.

Born in Helsingborg, Sweden, Mr. Thomee was graduated from the Stockholm School of Economics and came to the United States in 1919. After having been associated with several Canadian and American mills, he joined the Bulkley-Dunton Pulp Company in 1928. His thorough knowledge of the pulp business won him great esteem both in the trade and in the company, and in 1938 he was appointed vice-president.

An enthusiastic dog fancier of note, Mr. Thomee was former president of the Verbank Hunting & Fishing Club and president of the Orange County Field Trial Club. He was a member of the Round Hill Club and Field Club of Greenwich.

He leaves behind a widow, the former Josephine Elliott, and two children, Joanne and Gilbert.

Joseph C. Reynolds

NEW YORK — Joseph C. Reynolds, who was associated with West Virginia Pulp and Paper Company for 33 years and formerly managed its Chicago sales office, died recently in Miami, Fla., after a brief illness. He was 69 years old at the time of his death.

A native of Indiana, Mr. Reynolds was engaged in the newspaper business in Rensselaer and Delphi, Indiana, before joining West Virginia Pulp and Paper Company in 1913 as an assistant in the Chicago sales office.

Mr. Reynolds is survived by a brother, Adams Earl Reynolds, of Rensselaer.

Murray Schlosser

NEW YORK — Murray Schlosser, founder and former president of the Schlosser Paper Corporation of New York, died suddenly early last Sunday evening while in Florida. Mr. Schlosser was widely known in the paper trade and during his thirty-four years in business had become mill agent for many of the country's largest paper manufacturers.

Services were held Wednesday at Riverside Memorial Chapel in New York. He leaves a widow, Frances, two daughters, Mabel Adele and Mary, a sister, Theresa Schanzer, a brother, Fred. Another brother, Arthur, died only recently.

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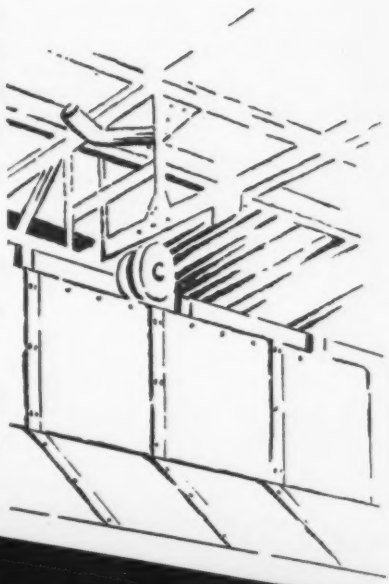
Asbestos yarns woven at scientifically determined intervals into the face of Woodberry 887 reinforced dryer felts result in longer wearing contact surfaces. These asbestos yarns, a patented feature, protect the face of the felt and add to their length of service—reducing the costs per ton of paper made.



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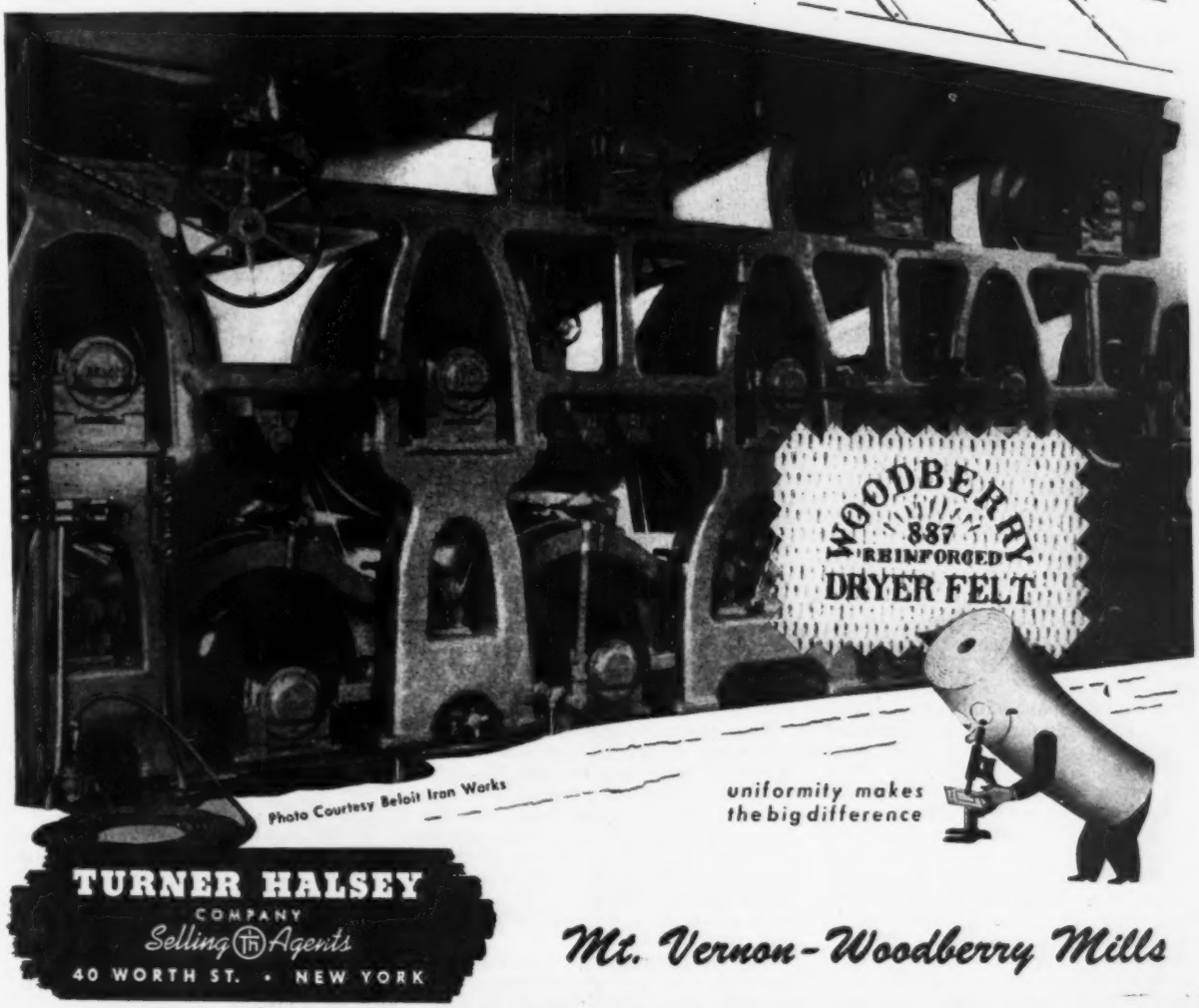

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Australia Wrestles With Problems of Shortage

PERTH, West Australia—As the year opened several states are suffering from a serious shortage of bags, brown wrapping paper, writing pads, envelopes and cardboard boxes, Christmas shopping rush was partly responsible for this, but supplies for some time past have been far from satisfactory. Manufacturers report that the scarcity of fuel, lack of transport and ban on overtime are all helping to make it difficult to keep production at a decent level.

The Ballarat (Victoria) Council recently extended a civic welcome to Sir Frank Nelson, representing Thomas Owen Ltd., British paper makers who are establishing a large paper mill in the district, and now Mr. W. Harrison, chairman of the company, has arrived from England to inspect the site. Mr. Harrison reports that two British experts were sent to look over the site and investigate the possibilities of converting the Government cordite factory into a paper mill some eight months ago, and as they considered that the plan would be feasible, final details would now be arranged. As the mill would be a very large one a considerable amount of new machinery would have to be imported from the United States and from Great Britain. Majority of workers would be Australians, although some 200 key personnel would be brought from England. It is expected that some of the new American machines will cost as much as $3,840,000 each.

Mrs A. N. Audley, proprietress of the Wrap-Ade Machine Company Inc., manufacturers of commercial packaging machinery, came from the United States recently to join her husband, who is manager of Wax Papers Pty. Ltd. Mrs. Audley, who considers that Australia is industrially "up and coming" hopes that her company will soon be operating in Australia.

G. J. Robertson, A. A. C. I., chemist of the Associated Pulp and Paper Mills, Burnie, Tasmania, reports the discovery of extensive high-grade deposits of kaolin in that state. Establishment of the paper industry in Tasmania has created a steady demand for kaolin, and at the present time some 5,000 tons a year are needed. This amount, however, will be greatly increased with the expansion of the paper industry now being undertaken. As it was impossible to import clays during the war years, Australian paper makers were compelled to use inferior local clays, and investigations carried out in Tasmania have shown that the majority of clays offered by local suppliers have been of poor quality. Efforts to locate better grades have now been successful, but so far all clays are being mined dry by open cut methods and the clay is bagged and transported to the paper mills for treatment. It is expected that before long treatment will be carried out on the site.

Associated Pulp & Paper Pty. Ltd., who are now installing their third paper machine in their Tasmanian factory, have a fourth machine on order, but do not expect delivery of this until some time in 1950. Paid capital of the company stands at $7,680,000, while liabilities are listed at $255,600. Assets include: Freehold land, etc., $683,342; buildings and plant, $6,997,310; stores, etc., $1,147,997; finished stocks, $265,-416 (last year, $387,518), debtors, $672,902; cash, etc., $1,483,214; and rights, preliminary expenses, etc., $1,-234,507. The one pound ($4.80 at par) shares are fixed at a ceiling price of $8.16. All users of the company's products are still being supplied strictly on a quota basis.

Fruitgrowers in all states are complaining regarding the serious shortage of fruit wraps, and at the moment there seems little prospect of any improvement in the situation.

Registered in New South Wales recently: Uneeda Paper Goods Manufacturers Pty. Ltd., with a capital of $48,-000 in $4.80 shares. Objects, to manufacture a variety of paper products. Subscribers—H. & E. Sabatzky. Offices, Sydney.

Sir Norman E. Brookes, chairman of Australian Paper Manufacturers Ltd., speaking recently to shareholders, said: "Excessive taxation is inconsistent with an inventive, robust private enterprise assisting, in a maximum degree, to the provision of full employment. It destroys the essential driving urge to achievement on the part both of employers and employees, and making difficult the continuous overhaul and improvement of machines and technical equipment, without which Australia will be unable to keep in the van of industrial progress." During the six years ended June, 1945 (that is, the period covering the war) Sir Norman Brookes' company paid by way of income tax on profits the sum of approximately $5,217,600.

The Associated Chambers of Commerce are of the opinion that import licensing restrictions on goods in short supply in Australia cannot now be justified, and it would seem that the Prime Minister (Mr. Chifley) agrees with this contention, for he officially states that a decision on the extent to which import controls will be removed from goods is to be made within the next few weeks.

Playing card manufacturers have the excise duty on their product upped considerably since the outbreak of war, an extra $1.92 per dozen packs having been imposed.

Officers of the Customs and Commerce departments are reviewing the Australian tariff schedules and the tariffs of the principal countries with which Australia trades, in preparation for the forthcoming international trade conference. He says that it is necessary to contemplate some tariff reductions, but that the Federal Government intends to proceed with its plans for the progressive industrialization of Australia, and will impose "additional protective tariffs where necessary."

"Extensive restrictions may soon be placed on Australian imports from the United States," he says, "because of the increasing shortage of dollar credits. As yet, specific methods of assisting Britain by reducing imports from America have not been decided." However, it is anticipated that whatever cuts are made will be strictly on luxury lines. Import restrictions on a wide range of goods from Britain have been removed, but the existing sponsorship system affecting paper still operates.

Disagreement regarding the purchase price of the Government gun-cotton factory at Ballarat (Victoria) is holding up the establishment of a paper manufacturing industry there. The Premier of Victoria (Mr. Cain) has been conferring with the Prime Minister, the chairman of the Secondary Industries Commission (Mr. Jensen) and Mr. W. Harrison, of the English paper manufacturing firm, Thomas Owen & Co., but neither Mr. Cain nor Mr. Harrison will comment upon the matter except to say that the proposed industry would be an outstanding acquisition to Australian business. Price mentioned for the factory was £720,000, but whether this was the Government figure or that suggested by the paper firm cannot be ascertained. However, it is rumored that before a definite agreement can be reached Mr. Harrison will probably fly back to England to consult his principals.

The directors of New Zealand Forest Products have decided to enlarge their mills in order to give greatly increased production. They are anxious to import plant for the manufacture of multi-wall bags and corrugated containers. Their pulp and paper projects have been developed as far as possible under the circumstances, and the early establishment of chemical pulp papermaking plants is anticipated. The chairman of directors (Mr. D. Henry) stated at a recent meeting in Auckland that the time was not far distant when the annual sales should reach a total of £5,000,000.

There is at the moment an acute shortage of paper bags and brown wrapping paper throughout the Commonwealth. According to Sir Herbert Gepp, managing director of Australian Paper Manufacturers, the three main reasons for the shortages are: Lack of fuel, no overtime production, and lack of transport.

The acute shortage of paper fruit

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WAREHOUSES AT ALL THE ABOVE

wrappers was recently brought before the notice of the Government by the Autralian Apple & Pear Growers' Association. They asked that more wrappers be imported, and the answer from the Minister was: "With regard to the request that fruit wraps be imported under open license, I have to advise that import quotas and licenses operate only in respect of non-sterling countries and no license is required for sterling areas. But the present difficulty in securing supplies is due to a general world shortage of this commodity rather than to any restrictive conditions of importation. Where it can be shown that additional suppplies are needed by the industry and the importer can produce a firm offer from an overseas supplier, the central licensing branch of the Department of Trade & Customs is prepared to consider favorably the issue of any necessary license for the additional quantity involved."

Kaolin Corporation, N.L., of Adelaide, report a loss of £1,622 for the year, the work of installing the necessary plant and erecting buildings having occupied greater time than was expected owing to the extreme difficulty in securing supplies. However, the corporation proposes to make a further issue of capital shortly for the installation of special drying equipment. Directors state that the plant is capable of producing a material in grades that will meet the specifications of various consumers, and they add that work is now proceeding on a 35-ton trial order for a paper mill.

Davis Statometer Detects Presence of Static

NEWARK, N. J.—According to latest available statistics, the loss to business and industry, through damage by discharges of static electricity, is considerable. Location of static charges and the employment of proper corrective measures, can reduce this loss. Davis Emergency Equipment Co., Inc., 245 Halleck St., has perfected its Statometer as a portable, self-contained electric instrument designed to aid in the study of electrostatic conditions.

It is claimed that the meter of this instrument, calibrated in terms of static volts is sensitive enough to detect static charges on the order of fractional volts, either negative or positive.

Preferred Utilities Offers Steam Generator Booklet

NEW YORK — Recently published by Preferred Utilities Manufacturing Corp., 1860 Broadway, is a two-color, eight-page bulletin, describing in detail Preferred Unit Steam Generators. These self-contained, oil-fired, steam generating plants of four-pass, induced draft construction range in size from 40 to 500 H.P. They operate fully automatically even on heavy oil with minimum guaranteed thermal efficiencies of 80 per cent.

Chicago News Drops $5 Other Waste Steady

CHICAGO—A decline of $5 a ton in No. 1 news prices was reported this week, a move which forced down the price of truckloads and carlots to $25 a ton at the mills. Information here indicates that the break came because of Spring weather which always forecasts peak collections which create a heavier market and the resultant declines. Mill prices of other grades, however, held steady and unchanged over the past month. No. 1 mixed stayed at $20 a ton while No. 1 corrugated remained at $36 a ton.

Dealer's paying prices were reported to have gone down in exact ratio to mill prices for waste news, according to local reports. The new dealers' price was quoted as 75 to 80 cents a hundredweight, compared with 95 cents to $1 last month. Dealer prices for other waste paper grades were quoted as the same as last month.

All markets of new grades of paper remained very strong with no improvement in the supply shortage expected for many months yet. There were indications that substitute grades of paper were beginning to take a permanent place on purchasing agents' lists as former grades continued to be off the market. It was definitely indicated in several buyer sources that it was harder to get paper now, particularly mimeo papers, than it had been "at the peak of the war effort." Prices, however, remained at a satisfactory and commendable level as the industry continued to exercise restraint in realization of its obligation to future market and future customers.

New Textile Manual Slated To Appear Soon

NEW YORK—John Wiley & Sons has announced for publication on April 21 the new fifth edition of Matthew's *Textile Fibers,* edited by Herbert R. Mauersberger, textile consultant and technical editor of the "Rayon Textile Monthly." Written originally by the late Dr. J. Merritt Matthews, earlier editions of *Textile Fibers* have been in use for nearly forty-three years. The new edition is in reality an entirely new book. Under the editorship of Mr. Mauersberger, a technical advisory and review board of forty-seven leading textile technologists has collaborated to produe an up-to-date manual, which, while based in some measure on the earlier work of Dr. Matthews, differs greatly in arrangement and basic plan.

The new *Textile Fibers* deals individually with the natural, regenerated natural, and synthetic fibers, including woodpulp, paper and paper yarns. The aim of the editor and contributors has been to prepare a book which can be used as a text for students as well as a practical technical reference for those working in almost any phase of the textile industry.

Newsprint Profits Influence Prospects

(Continued from page 7)

uary 1st added another 25% or approximately $2 a ton to the cost of newsprint. Increased labor costs are difficult to determine on the per ton basis, but this was undoubtedly a considerable factor in governing the latest price boost, which brings the price of newsprint sold in New York to $90 a ton.

Following Consolidated, Abitibi and International in boosting the price by $6 a ton were Donnacona, Great Lakes, Lake St. John, Powell River and St. Lawrence Paper Mills. These eight companies account for 60 percent of Canadian newsprint capacity.

While the price of Canadian newsprint on a basis of f.o.b. New York will have risen from a pre-war (1939) price of $50 a ton, to $90 a ton, as of April 1st, or by $40 a ton, prices of chemical wood pulps will have shown even greater advances, when the rise of $10 a ton on most grades becomes effective this month. The new price levels will bring about one of the most unusual coincidences that have ever happened in this industry—or perhaps in any other—namely, that the four classes, bleached and unbleached sulphite pulp and bleached and unbleached sulphate pulp (or kraft) have each recorded an advance of $65 a ton.

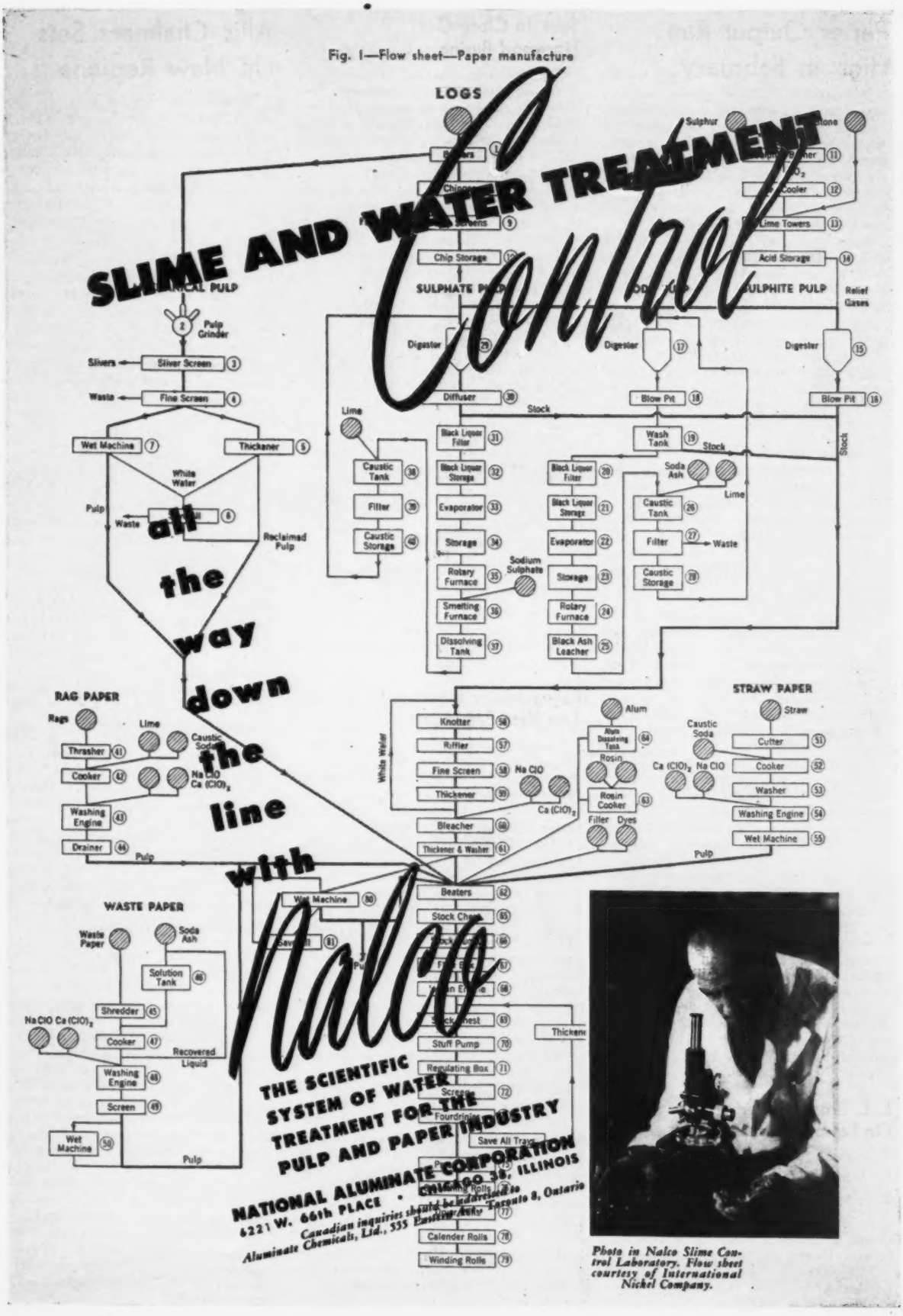
A statement in the House of Commons by Angus MacInnis, to the effect that "when the prices board lifted controls on newsprint the controls passed into the hands of a few people who were not even Canadian citizens," was answered by Chas. England, secretary-treasurer of Great Lakes Paper Company, when he said: "Most Canadian companies are Canadian controlled and are entirely independent of publishers in the United States. Canadian companies have in most cases long-term contracts with U. S. customers, up to as much as 15 years, and these contracts cannot be broken. Some contracts read that the producer is to supply all the buyer's needs. No matter how short the supply is in Great Britain or elsewhere, newsprint producers with such full contracts cannot do a thing about it."

Several companies operating in Canada were organized by and are owned by U. S. publishers, but these produce a minor part of Canada's total newsprint output.

International Talc Elects

GOUVERNEUR, N. Y. — The annual meeting of the International Talc Corporation, held this week, resulted in the election of Robert H. McCarthy as president. Other officials for the ensuing year include S. H. Tuttle, of Plainfield, N. J., vice-president and secretary; S. J. McCrinlick, of Brooklyn, treasurer; and John J. McNamee, of New York, assistant treasurer.

Fig. 1—Flow sheet—Paper manufacture



SLIME AND WATER TREATMENT Control all the way down the line with Nalco

THE SCIENTIFIC SYSTEM OF WATER TREATMENT FOR THE PULP AND PAPER INDUSTRY

NATIONAL ALUMINATE CORPORATION
6221 W. 66th PLACE • CHICAGO 38, ILLINOIS

Canadian inquiries should be addressed to Aluminate Chemicals, Ltd., 555 Eastern Ave., Toronto 8, Ontario

Photo in Nalco Slime Control Laboratory. Flow sheet courtesy of International Nickel Company.

Paper Output Ran High in February

WASHINGTON—The production of paper and paperboard during February, at 1,628,848 tons, continued the record-breaking pace of recent months, according to a preliminary report by the Bureau of the Census. While output was 135,645 tons below January, the decline can be accounted for by the shorter working month.

Pulpwood receipts during the month, at 1,856,222 cords, were 146,728 cords over January and 340,398 cords above February a year ago. This high volume of receipts enabled the mills to increase their holdings by 331,740 cords while maintaining consumption at the high rate of 1,533,386 cords. The greatest increases in receipts over January were recorded in the Northeastern and Southern regions. The Appalachian region showed a slight drop.

Receipts of fibrous materials, other than pulpwood, dropped sharply during the month. The new supply of these materials were insufficient to meet requirements, necessitating a further withdrawal from the ample year-end stocks. Paper mill inventories of waste paper on February 28, at 460,034 tons, were 32,668 tons below stocks reported on January 31.

February wood pulp production, at 915,680 tons, although 82,138 tons below the record set in January, was 138,107 tons above the February 1946 figure. As in the production of paper and paperboard, the decrease between January and February was general for all grades and principally due to the shorter month.

Consumption of wood pulp in the manufacture of paper and paperboard amounted to 1,025,265 tons and was only 87,469 tons below the January record. Despite the continued high rate of consumption, reported receipts of wood pulp at paper and paperboard mills improved their month-end holdings by 11,674 tons. This increase, principally of European wood pulp, was largely of pulp received in this country in prior months but not transferred to paper mills until February. Paper and paperboard mill inventories of wood pulp on February 28 amounted to 409,062 tons as compared to 618,207 tons on hand at the end of February 1946. Month-end inventories of pulp mills, at 76,368 tons, remained practically unchanged.

L. L. Brown Staff to Vote On Labor Representation

ADAMS, Mass.—Employes of the L. L. Brown Paper company will be given the choice of selecting the Paper Workers' union, AFL, as its bargaining agent or voting for no union at all at a National Labor Relations Board election.

The election will be open to all mill employes, but will not include foremen nor office workers.

Seek to Close Out Norwood Business

NORTHAMPTON, Mass. — Att'y Luke F. Ryan, trustee for the bankrupt Norwood Engineering Company has filed a petition with Bankruptcy Referee Walter L. Stevens, to sell the assets of the Norwood Engineering Company for $155,000 and to compromise a controversy between the bankrupt and the Krock Brothers of Worcester, who are in control of the Norwood plant in Florence.

A hearing on the petition will be held by Referee Stevens in the Hampshire county courthouse on April 18th at 11 a.m. All of the creditors of the concern will be duly notified.

The petition does not state the name of the prospective buyer of the plant, but it is understood to be a concern which intends to reopen the plant, which suspended activity in July of last year.

The petition sets forth that under the terms, the Krock brothers of Worcester, who got control of the company in May, 1946, will be paid approximately $100,000. Of this total nearly $73,000 would be in payment, in full, for the bonds of the concern owned by the Krocks and the remaining $27,000 would be to compromise the controversy.

The remaining $55,000 will be available to pay the other bond-holders of the concern, for the cost of administration and for distribution among the creditors.

Bailey Meter Elects Two Vice-Presidents

CLEVELAND—R. S. Coffin, president of Bailey Meter Company, announces the election of H. M. Hammond, former general sales manager, and P. S. Dickey, former chief engineer, as vice-presidents. Mr. Hammond was graduated from Rensselaer Polytechnic Institute in 1918 and served as a naval officer before joining Bailey Meter Company as a field engineer in 1919. He was assigned to the Ohio-Pennsylvania area and became Philadelphia branch manager in 1921. In 1923 he was appointed sales manager. He is a registered professional engineer and a member of the A.S.M.E., A.P.I., and Cleveland Engineering Society. Mr. Hammond will continue to direct all sales activities of the company.

Mr. Dickey is a graduate of Purdue University and has been assocaited with Bailey Meter Company continuously since 1925. In 1934 he became chief research engineer and in 1940 special consultant on marine problems. He was appointed chief enginer in November, 1944. Mr. Dickey is a registered professional engineer and a member of the A.S.M.E., S.N.A.M.E., Cleveland Engineering Society, and Sigma Xi, national engineering research fraternity. He will continue to direct the Company's engineering activities and to advise its foreign affiliates in engineering problems.

Allis Chalmers Sets Up New Regions

MILWAUKEE—Under a newly adopted regional set-up for the field organization of the Allis-Chalmers general machinery division, Allis-Chalmers branch offices in the new regions become district offices. According to J. L. Singleton, manager of district offices, the following are now designated as district managers in the first four regions established:

In the New England region, A. B. Frost and R. H. Porterfield are managers of the New Haven and Providence district offices, respectively, reporting directly to W. F. Taylor, Boston, manager of the region. Covered in this region are the states of Maine, New Hampshire, Vermont, Massachusetts, Connecticut and Rhode Island.

In the Southwest region, W. R. Horrigan, Aubrey Phillips, E. R. Hury, L. G. Park and R. I. Moore are managers of the Amarillo, Houston, San Antonio, Shreveport and Tulsa district offices, respectively, reporting directly to J. L. Pratt, region manager, who has been succeeded as manager of the Dallas district office by H. L. Reynolds. This region encompasses Texas, parts of Arkansas, Oklahoma, Kansas, Louisiana, New Mexico and a portion of the state of Coahuila in Mexico.

In the Southeast region, J. J. Greagan, William Parker, J. W. Roberts, G. H. Hoffman, A. R. Knauss, Joseph Bronaugh, R. F. Muller and A. D. Robertson are managers of the Birmingham, Charlotte, Chattanooga, Knoxville, Memphis, Miami, New Orleans and Tampa district offices reporting directly to D. S. Kerr, manager of the region, who is succeeded as manager of the Atlanta district office by Charles F. O'Riordan. This region covers North and South Carolina, Georgia, Florida, Alabama, Tennessee, Mississippi, a portion of Arkansas and Louisiana and three counties in Missouri.

In the Pacific region, F. V. Sams, F. Harvey Searight, U. E. Sandelin remain as managers of the Portland, San Francisco and Seattle district offices, respectively, reporting directly to A. J. Schmitz, manager of the region, which covers California, Nevada, Oregon, Washington, northern Idaho and three counties in Montana. In the same region, C. W. Schweers, formerly manager of the firm's Houston district office, becomes manager of the Los Angeles district office succeeding A. D. Brown named manager of the company's Washington, D. C. office. R. N. Landreth, who has been acting manager of the Washington office, will now devote full time to his special duties as assistant to Vice-President Johnson. A. R. Kohlmetz remains as manager of the Spokane branch of the Seattle district.

"Young Man with a HORN"

What appears to be a glass saxophone in the hands of a Sinclair Laboratory technician is in reality an important instrument used in protecting you against lubricants with low resistance to oxidation.

It's part of Sinclair's apparatus to determine oxidation rate of both non-additive and additive type lubricants. It is used constantly by Sinclair in Research and Refinery Control to assure you of maximum lubricant life without formation of harmful corrosive acids, varnish or carbon deposits on working surfaces.

Resistance to Oxidation is a prime requisite of all good lubricants. Sinclair's "Young Man With A Horn" — and others equally painstaking — stand guard constantly at Sinclair Laboratories to assure you that any Sinclair Lubricant you buy has the very highest degree of quality necessary for maximum operating efficiency.

Sinclair Lubricants for the Power Plant

For Turbines:
SINTURLITE OILS
For Steam Cylinders:
SINCLAIR STEAM CYLINDER AND VALVE OILS
For Compressors:
RUBILENE OILS
For General Lubrication:
COMMANDER OILS
For Ball and Roller Bearings:
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Lubricants for Industry

FINEST CRUDES + EXPERT RESEARCH and MANUFACTURING CONTROL = OUTSTANDING PERFORMANCE

IMPORTS

NEW YORK IMPORTS

WEEK ENDING APRIL 5, 1947

SUMMARY

Newsprint	5174 rolls
Paperhangings	11 cs.
Printing Paper	30 cs.
Tracing Cloth	28 cs.
Glass Paper	1 cs.
Wrapping Paper	189 rolls
Packing Paper	9 rolls, 250 bls.
Sulphite Paper	411 rolls
Coated Paper	55 cs.
Strawboard	15 bls.

NEWSPRINT

Bowater Paper Co., Cornerbrook, Cornerbrook, 1381 rolls.

N. Y. Journal American, Liverpool Packet, Liverpool, N. S., 681 rolls.

N. Y. World Telegram, Liverpool Packet, Liverpool, N. S., 628 rolls.

N. Y. Tribune, Inc., Liverpool Packet, Liverpool, N. S., 1940 rolls.

Brooklyn Eagle, Inc., Liverpool Packet, Liverpool, N. S., 502 rolls.

Herald Statesman, Inc., Liverpool Packet, Liverpool, N. S., 42 rolls.

PAPERHANGINGS

W. H. S. Lloyd & Co., America, Southampton, 11 cs.

PRINTING PAPER

Oxford University Press, Fort Mattagami, Liverpool, 30 cs.

TRACING CLOTH

Keuffel & Esser Co., Fort Mattagami, Liverpool, 28 cs. (bleached cotton).

GLASS PAPER

T. D. Downing & Co., American Merchant, Liverpool, 1 cs.

WRAPPING PAPER

E. M. Warburg, Inc., Dalton Victory, Gothenburg, 150 rolls (sulphite).

Crepe Kraft Co., Dalton Victory, Gothenburg, 22 rolls.

Knight Bros. Paper Co., Dalton Victory, Gothenburg, 17 rolls.

PACKING PAPER

Alfred Shiftan, Inc., Noordam, Rotterdam, 9 rolls.

J. P. Heffernan Paper Co., Pres. Polk, Genoa, 250 bls.

SULPHITE PAPER

Resolute Paper Products Corp., Dalton Victory, Gothenburg, 411 rolls.

COATED PAPER

F. P. Gaskell & Co., Elysia, Glasgow, 55 cs. (for cigarette tipping).

STRAWBOARD

Chase National Bank, Houffalize, Antwerp, 15 bls.

RAGS, BAGGING, ETC.

E. J. Keller Co., Inc., Saginaw Victory, Antwerp, 68 bls. heavy burlap waste old jute bagging; 54 bls. old bagging.

(———), Fort Mattagami, Liverpool, 6 bls. new wool rags; 14 bls. wool thread waste; 4 bls. old wool rags.

Tradesmans National Bank Trust Co., American Merchant, Liverpool, 144 bls. old webbing (paperstock).

Continental Bank Trust Co., Newberry Victory, Genoa, 114 bls. dark cotton rags.

Textile & Paper Supply Corp., Newberry Victory, Genoa, 41 bls. dark cotton rags.

Amicale Wool Service Co., Newberry Victory, Genoa, 145 bls. dark cotton rags.

Continental Bank Trust Co., Newberry Victory, Leghorn, 69 bls. rags.

J. Eisenberg & Son, Inc., Karla Dan, Havana, 55 bls. rags.

McKay & Co., Pres. Polk, Bombay, 215 bls. cotton waste.

Loumar Textile By Products, Inc., Pres. Polk, Bombay, 540 bls. rags.

Amicale Wool Service Co., Pres. Polk, Genoa, 167 bls. old dark cotton rags.

Roverside Mills, Red Jacket, Shanghai, 100 bls. cotton waste.

Schimmel Trading Corp., Bowplate, Santos, 34 bls. cottonpicker waste.

Royal Manufacturing Co., Bowplate, Santos, 33 bls. cottonpicker waste.

Tradesmans National Bank Trust Co., Santa Maria, Callao, 69 bls. cotton waste.

WOODPULP

Gottesman & Co., Inc., Dalton Victory, Gothenburg, 7286 bls. dry sulphate pulp, 457 tons; 60 bls. dry chemical pulp, 12 tons.

Cellulose Sales Co. Inc., Dalton Victory, Gothenburg, 15 rolls dry sulphite pulp, 2 tons.

Swedish American Pulp Corp., Dalton Victory, Gothenburg, 5000 bls. dry perforated bleached sulphite pulp, 1000 tons.

WOODFLOUR

Ovimpex, Inc., Pierre Victory, Antwerp, 1452 bags.

GLUESTOCK

John Gorvers, Santa Ana, Barranquilla, 82 rolls.

National City Bank, Karla Dan, Havana, 67 bls.

BOSTON IMPORTS

WEEK ENDING APRIL 5, 1947

Wesco Waterpoints, Inc., Kaimata, Wellington, 800 bags casein.

New England Waste Co., Pres. Polk, Bombay, 480 bls. cotton wick cuttings.

PHILADELPHIA IMPORTS

WEEK ENDING APRIL 5, 1947

A. Murphy & Co., American Merchant, Liverpool, 41 cs. gummed paper.

National City Bank, Leerdam, Rotterdam, 1456 bags cellulose.

Schwartz & Co., Saginaw Victory, Antwerp, 1 pcl. parchment paper.

New Circulating System Expected to Reduce Costs

PITTSBURGH, Pa.—A new design for radiant heating application in industrial plants—aimed to reduce both installation charges and maintenance costs—has been developed by the Rust Engineering Company for the mill of Container Corporation of America at Fernandina, Fla. The new system, now being installed, utilizes high-temperature water instead of steam as the heat source. It eliminates thermostatic traps, condensate pumps and pressure reducing stations, all of which are factors both in original cost and in the maintenance expense of orthodox, steam radiant heating.

This installation, which is believed to represent the first industrial use of high-temperature water to transfer heat to radiant coils, will serve a group of four buildings. The high-temperature water is brought to the desired temperature by plant steam in a central heat exchanger. An oil-fired hot water boiler is installed for stand-by operation during a shutdown of the main plant. The heated water circulates to the individual buildings where it is transferred by heat exchangers to water in the radiant coils of the heating system.

The water on the main circuit then returns to the central heat exchanger for reheating, and the circuit is repeated. The same high-temperature water will also be used, in this installation, to heat domestic water and to temper air for ventilating systems for the mill.

Pittsburgh Plate Glass Advances Berghoff

PITTSBURGH, Pa. — Guy Berghoff, director of public relations for Pittsburgh Plate Glass Company, will assume direction of all the company's advertising activities, according to an announcement by Harry B. Higgins, president of the firm. Pittsburgh Plate, a leading producer of glass, paints, chemicals and brushes, will continue to maintain separate advertising departments in these four divisions. The firm also operates an extensive warehousing and stores system throughout the country.

Mr. Berghoff joined the firm in 1934 as assistant manager of glass advertising and promotion. He served in that position for ten years prior to his appointment as director of public relations.

WE HAVE AN UNDERSTANDING OF FELT

THAT WE CONVERT INTO **LOWER**

OPERATING COSTS FOR YOU

TENAX
"TENAX FELTS ARE TOUGH"

There is little that is secret about the manufacture of felt for paper making. It is rather a matter of experience and craftsmanship; the use of the finest virgin wools; the expertness of weavers and carders.

Here at Lockport where we have been making felt for leading paper makers for 56 years we have experience in abundance; craftsmanship of the highest order; the ability and the judgment in buying the wools that give the best felting qualities.

Our felts—**TENAX FELTS**—are the product of all this accumulated experience and this father-to-son craftsmanship. They are made to serve you and serve you well; to help you produce more at less cost; to keep your mills and machines running for longer periods at a more profitable rate. Our field men are at your service as is our plant and all its people. We invite your inquiries.

LOCKPORT FELT COMPANY
NEWFANE, N. Y.
SERVING THE PAPER INDUSTRY SINCE 1891

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, April 9, 1947.

Over-all demand for paper and paperboard is still very strong but spottiness is becoming more evident. Consumers appear less concerned over increasing inventories at current prices and are reported ordering in smaller quantities. Demand for set-up paper boxes is firm in some localities, particularly the Pacific Coast, while the situation is spotty elsewhere. Some box producers are sold well ahead, others have just enough work to keep going full time. Groundwood printing orders by book publishers continues very heavy, while commercial printers seem to be holding back for more variety in printing stock, keeping smaller inventories in anticipation of future price easing. Kraft papers are more plentiful but still far from meeting demands as some spot offerings at premium prices are reported. Supplies of absorbent, tissue and sanitary papers are reported increased in high cost grades and decreased in low priced grades. In the New York area new and varied collections of lower-priced machine made wallpapers are available for the first time since pre-war days. Retail prices for the new wallpaper rolls range from just under $1 to about $4. Much of the styling and originality prominent in handprinted papers which had been the only outlet for new designs since late 1945, have been embodied in the machine made rolls. Contrary to some opinion, not all newsprint mills have raised prices in the recent surge. Uneasiness and cautious planning is noted particularly in Canadian mills. In one instance, a Canadian mill is said to have stipulated that a certain purchaser place 2½ million dollars in escrow to insure fulfillment of a 10-year purchase contract.

The index of general business activity for the week ended March 29 rose to 147.2 from 146.7 in the previous week, compared with 134.0 for the corresponding week in 1946. The index of paperboard production was 178.2, compared with 174.5 in the preceding week and with 165.2 for the corresponding week in 1946.

Paper production for the week ended March 29 was estimated at 109.6 percent, compared with 105.8 percent for the preceding week, with 104.9 for the corresponding week in 1946, with 88.9 for 1945, with 85.7 for 1944, and with 88.6 percent for the corresponding week in 1943.

Paperboard production for the week ended March 29 was 102.0 percent of capacity, compared with 103.0 percent for the preceding week, with 100.0 percent for the corresponding week in 1946, with 100.0 for 1945, with 93.0 for 1944, and with 95.0 percent for the corresponding week in 1943.

Woody fiber of waste cotton plants can be used to make serviceable paper or to extend wood pulp supplies according to the Office of Technical Services, Department of Commerce. Chemical analysis and microscopic examination of the cotton plant indicate that its fibers are similar to other paper making materials in length and quality of fibers. Soda and sulfate methods give highest yields of pulp when applied to lower stem and root with best grade fiber recovered from inner bark. Tall, thick stalks grown in the Mississippi Valley and in South Carolina give a good yield of high quality fibers. Papers made from these stalks have a good bursting strength, take ink remarkably well when neither filler nor size is used, but have a somewhat low folding endurance. Experimental cooking of the pulp with various chemicals under different conditions of concentration, temperature, and pressure showed best results were obtained with solutions of sodium hydroxide alone or mixed with sodium sulfide, and the best sheets were formed before the pulp dried. Sodium sulfide sheets had the best fold, tear and bursting strength. High pentosan content increased bonding strength and natural sizing. The report recommends removal of worthless outer bark and pith, harvesting of cotton plants during slack labor season and establishment of paper mills in areas where strong cotton plants are available.

Current separation rate of 3.3 per hundred workers is a new postwar low for the paper and allied products industry and tends to balance the 3.2 rate of accession which likewise is a new record low. Absenteeism in the paper industry is reported as no longer a serious problem. Nearly all mills using freight cars as a means of transporting pulpwood report an added number of workers and an increase in labor costs. More and more box cars instead of the usual rack cars are being used in many instances to transport pulpwood. The added number of workers to perform work formerly done by mechanical means, such as a crane, has intensified mill labor difficulties. This is particularly true at some southern mills where the labor market for yard workers has been tight for some time.

Wood Pulp

Independent paper and paperboard mills in Ohio, the Mid-West, Lake States, New England and certain sections of the South continue to report periods of pulp scarcity. Many of these mills are currently operating on a hand-to-mouth basis. Some Massachusetts mills have reduced weekly operating schedules owing to scarcity of pulp, some of which is being shipped by water from the West Coast. In addition to pulp shortages, paper mills consuming market pulp are up against a supply problem of growing significance caused by increasing demands for pulp of dissolving grade with the rayon industry taking about 67 percent of all available supplies.

Waste Paper

Paper and board mills are beginning to build up substantial inventories for the first time this year. Last week's collection brought these mills 3 percent more waste paper than was consumed, which makes the third week in the last 13 that receipts exceeded consumption. Mill requirements, however, remain heavy enough to call for increased collections in the second quarter.

Quotations for waste paper continue at peak levels with hard white envelope cuttings $120 and up. Mixed books are strong at the $25 level; No. 1 white ledger active at $80 and upwards; No. 1 mixed paper above the recent $21 level in several instances.

Rags

Demand for new domestic cotton cuttings by paper mills is beginning to show signs of renewed activity. Nevertheless, prices remain much as they have been in recent weeks. White shirts are still $11.50 to $12 per 100 pounds delivered to mills plus dealer's commission. Light prints are strong at about $5.85; cottonades around $4.80 and washables close to the $4 level.

Old domestic cotton cuttings remain constant with No. 1 whites repacked close to the $5 level; No. 1 roofing rags as $2.20 and repacked thirds and blues around the $3 mark.

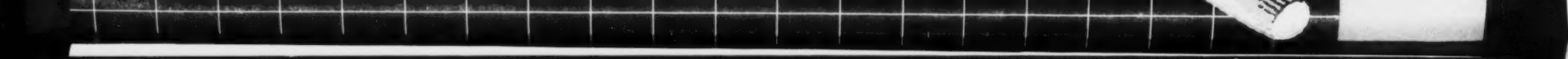
Old Rope and Bagging

Market for old rope has eased up somewhat with mills paying close to $4.50 for jute strings. No. 1 sisal is reported just above the $4 level, and mixed strings nearer the $2.60 mark. Domestic Manila remains $5.75.

A fairly active demand for bagging continues with paper mills taking up offerings of domestic No. 1 gunny at $4.25 to $4.50. Light wool tares are taken up at around $4.60 and heavy wool tares at close to the $5 level. Bright bagging remains at the $4.50 level.

Lou Beck Joins Baldwin

NEW YORK—Lou Beck, with twenty-two years' experience in the paper business in metropolitan New York has joined the sales staff of the Baldwin Paper Company, Inc.



Sutherland

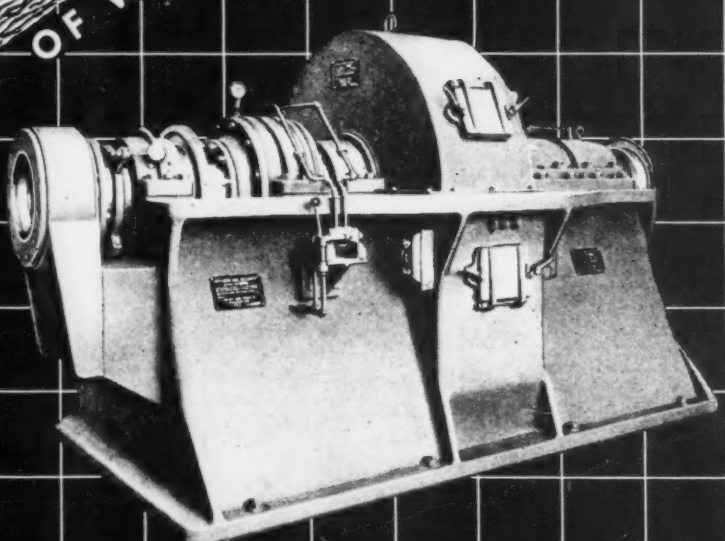
HIGH YIELD

SULPHATE PROCESS

MORE PULP PER POUND OF WOOD

MORE PULP PER POUND OF WOOD

MORE PULP PER POUND OF W



SUTHERLAND *continuous*
BEATING AND REFINING SYSTEM

SUTHERLAND REFINER CORPORATION

TRENTON, NEW JERSEY · *Manufactured in the United States by Valley Iron Works Co., Appleton, Wis.*

SUTHERLAND REFINER LIMITED, 319 DRUMMOND BLDG., MONTREAL, P.Q., Manufactured in Canada By The John Bertram & Sons Co. Ltd., Dundas, Ontario

PRICES

With the elimination of price controls on paper, pulp, rags and other materials, the quotations given below once more become indicative of trends in an open market. At the moment they can be of little more, for, while some volume of business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

Paper

(Delivered New York)

Standard News, per ton—

Roll, contract	$84.00	@	$90.00
Sheets	103.00	"	109.00

Kraft—per cwt.—Carload Quantities
Zone A, Delivered
40 lb. base weight

Superstandard Wrapping	$6.25	@	$6.50
No. 1 Wrapping	6.00	"	6.25
Standard Wrapping	5.25	"	6.00
Standard Bag	5.75	"	6.25

Tissues—Per Ream 24x36 (480) 10 lb. Zone 1.

Wh. No. 1 Frd.	1.10	@	1.20
Wh. No. 1 M. G.	1.10	@	1.20
Wh. No. 1½	.95	@	1.10
Wh. No. 2	1.00	@	1.10
Wh. Anti-Tar.	2.25	@	3.50
Kraft Unbl.	1.15	@	1.25
Manila No. 2	.90	@	1.05

Toilet—Per Case of 100 rolls 1 M Sheets.

Unbleached	4.47	@	5.50
Bleached	6.50	"	—

Paper Towels — Per Case of 3750 Zone 1.

Wh. C. fold 11x13½	4.09	@	—
Br. Sgl. fold 10 in.	2.37	"	2.48
Br. M'tif'd 9½x14¾	3.48	"	—
Br. M'tif'd 9½x9¾	2.37	"	2.48

Manila—per cwt.—C. l. f. a.

No. 1 Jute	11.25	@	—
No. 1 Manila 35 lb.	6.00	"	7.00

Boards, per ton—

News	*75.00	@	81.50
Chip	*73.00	"	77.50
Sgl. Mla. Ll Chip	*89.00	"	92.50
White Pat. Coated	*101.50	"	110.00
Kraft Liners 42 lb.	*84.00	"	100.00
Binders Boards	94.00	"	126.00

Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices, all deliveries in Zone 1:

Rag Content Bonds and Ledgers—White, Assorted Items

	Bonds		Ledgers
100% Rag Ext. No. 1	$39.75 @ $46.75		$40.90 @ $48.00
100% Rag	32.85 " 38.50		34.00 " 40.00
85% Rag	.... "		30.55 " 38.75
75% Rag	24.30 " 28.50		24.45 " 30.00
65% Rag	.... "		.... " ....
50% Rag	20.05 " 24.50		21.25 " 25.75
25% Rag	17.85 " 21.75		19.00 " 23.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers.. White, Assorted Items

	Bonds		Ledgers
No. 1	$12.00 @ $14.50		$13.15 @ $16.00
No. 2	11.25 " 13.75		12.25 " 15.00
No. 3	.... "		.... " ....
No. 4	10.60 " 13.00		11.75 " 14.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper

No. 1 Glossy Coated..	$14.70	@	$16.75
No. 2 Glossy Coated..	13.75	"	15.50
No. 3 Glossy Coated..	13.20	"	16.00
No. 4 Glossy Coated..	12.80	"	14.50
No. 1 Antique (Watermarked)	11.35	"	12.75
No. 2 Offset	10.65	"	12.25
A Grade E. F.	10.60	"	12.00
A Grade S. & S. C.	11.00	"	12.50
B Grade E. F.	10.30	"	11.75
B Grade S. C.	10.70	"	12.25
C Grade E. F.	10.00	"	11.50
C Grade S. C.	10.40	"	12.00
D Grade E. F.	9.70	"	11.00
D Grade S. & S. C.	10.10	"	11.50

Ivory & India at $.50 cwt. extra.

Wood Pulp

Domestic mill prices delivered with former OPA freight allowances.

	Per Short ADT		
Groundwood	$75.00	to	—
Unbleached Sulphite	117.00	"	—
Bleached Sulphite	121.00	"	125.00
Bleached Soda	105.00	"	115.00
Unbleached Kraft	102.50	"	—
Southern Kraft	90.00	"	102.50

Canadian mill prices delivered with freight allowances of $7.50 per ADT; unless otherwise specified:

	Per Short ADT		
Regular Kraft	$102.50	to	—
Select Unbleached Kraft (no freight allowance)	105.00	"	—
Unbleached Sulphite	115.00	"	—
Glassine Unbleached Sulphite (no freight allowance)	102.50	"	—
Bleached Soda	105.00	"	115.00
Groundwood	75.00	"	80.00
Siderunas Pulping News	75.00	"	—
Hardwood and Specialty Grades	Nominal		

Swedish Quotations
Ex. dock, New York

	Per Short ADT
Bleached Sulphite	$155.00
Bleached Kraft	150.00
Unbleached Sulphite	119.00
Unbleached Kraft	114.00

Finnish Quotations
Ex. dock, New York

	Per Short ADT
Bleached Sulphite	$165.00
Unbleached Sulphite	132.50
Unbleached Sulphite (special grade)	137.50
Unbleached Sulphate	132.50
Unbleached Sulphate (special grade)	159.00

Other European countries, at the present time, are not quoting on prompt and forward deliveries of wood pulp, because they have no tonnage available for export.

New Domestic Cotton Cuttings

(Prices delivered Mill Plus Dealer's Commission)

White Shirt	$11.50	to	$12.00
Light Silesias	7.50		
Unbleached Muslin	11.50	"	12.00
White Back Blue Overalls	8.25		
Blue Overalls	7.75		
Unbl. Fancy Shirt	4.50	"	5.00
Light Percales	5.50	"	6.00
Light Prints	5.25	"	5.95
Washables	4.00		
Bleachable Khaki	5.50	"	6.00
Unbleachable Khaki	5.00	"	5.50
Cottonades	4.50	"	5.00

Old Domestic Cotton Rags

(F O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs
No 1 Whites Repacked	$5.00
No. 1 Whites Miscellaneous	4.25
No. 2 Whites Repacked	4.00
No. 2 Whites Miscellaneous	3.50
Blue Overalls	3.75
Thirds and Blues Repacked	3.00
Thirds and Blues Miscellaneous	2.50
No. 1 Roofing Rags	2.20
No. 2 Roofing Rags	2.10
No. 3 Jute Bagging	2.00
No. 4 Brussels and hard back carpets	2.00
No. 5A Roofing Rags	2.00

New Foreign Cotton Cuttings

(Prices delivered Mill)

	Per 100 lbs.		
New Dark Cuttings	$6.00	to	....
New Mixed Cuttings	6.50	"	....
Light SHesias	9.00	"	10.00
Light Flannelettes	8.00	"	9.00
New White Cuttings	13.00	"	15.00
Fancy Shirt Cuttings	9.00	"	10.00
Light Prints	8.00	"	10.00
Bleachable Khaki, No. 1	7.00	"	7.50
Unbl. Khaki, No. 1	6.25	"	6.75

Old Foreign Rags

(F.O.B. New York)

	Per 100 lbs.		
No. 1 White Linens	$14.00	to	16.00
No. 2 White Linens	12.00	"	13.00
No. 3 White Linens	8.00	"	9.00
No. 4 White Linens	8.00	"	9.00
No. 1 White Cottons	10.00	"	12.00
No. 2 White Cottons	8.00	"	9.00
No. 3 White Cottons	6.50	"	7.00
No. 4 White Cottons	5.00	"	5.50
Extra Light Prints	7.50	"	8.00
No. 1 New Light Prints	6.25	"	6.75
Med. Light Prints	5.25	"	5.75
Dutch Blue Cottons	5.25	"	5.50
Checks and Blues	4.00	"	4.25
Linsey Garments	4.50	"	5.00
Dark Cottons	3.75	"	4.00
Old Shopperies	3.25	"	3.50
New Shopperies	3.25	"	3.50

BAGGING

(Prices to Mill, f.o.b. N. Y.)

	Per 100 lbs.		
Foreign Gunny, No. 1	$4.75	to	5.00
Domestic Gunny, No. 1	4.25	"	4.50
Light Wool Tares	4.50	"	4.75
Heavy Wool Tares	4.75	"	5.00
Bright Bagging	4.25	"	4.50
Foreign Manila Rope	6.00	"	7.00
Domestic Manila Rope	5.75	"	....
Jute Strings	4.50	"	5.00
No. 1 Sisal Strings	4.00	"	4.50
Mixed Strings	1.75	"	....

Waste Paper

Prices to Mills
(Dollars Per Ton)

F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	@	$120.00
No. 1 Hard White Envelope Cuts	90.00	"	100.00
No. 1 Hard White Shavings, unruled	100.00	"	110.00
No. 1 Hard White Shavings, ruled	80.00	"	90.00
Soft White Shavings, one cut	95.00	"	105.00
No. 1 Soft White Shavings	85.00	"	95.00
Soft White Shavings, Misc.	65.00	"	75.00
No. 1 Fly Leaf Shavings	55.00	"	60.00
No. 2 Fly Leaf Shavings	50.00	"	55.00
No. 1 Groundwood Fly Leaf Shavings	30.00	"	33.00
No. 2 Mixed Groundwood Fly Leaf Shavings	(nominal)		
Mixed Colored Shavings	(nominal)		
Mixed Groundwood Colored Shavings	(nominal)		
Overissue Magazines	(nominal)		
No. 1 Heavy Books & Magazines	40.00	"	45.00
Mixed Books	22.00	"	25.00
No. 1 White Ledger	70.00	"	80.00
No. 2 Mixed Ledger, colored	60.00	"	70.00
New Manila Envelope Cuttings, one cut	100.00	"	110.00
New Manila Envelope Cuttings	65.00	"	75.00
Extra Manilas	40.00	"	45.00
Mixed Kraft, Env. & Bag Cuttings	75.00	"	85.00
Kraft Envelope Cuttings	100.00	"	105.00
Triple Sorted, No. 1 Brown Soft Kraft	70.00	"	75.00
New 100% Kraft Corrugated Cuttings	70.00	"	75.00
No. 1 Assorted Old Kraft	40.00	"	50.00
New Jute Corrugated Cuttings	27.00	"	—
Old 100% Kraft Corrugated Containers	(nominal)		
No. 1 News	26.00	"	27.00
No. 1 Mixed Paper	19.00	"	21.00
Box Board Cuttings	23.00	"	—
White Blank News	75.00	"	80.00
Overissue News	(nominal)		
Old Corrugated	28.00	"	30.00
Mill Wrappers	22.00	"	25.00

Twines

All Prices Nominal
(F. o. b. Mill)
(Soft Fiber

Coarse Polished—India	.26	@	.29
Fine Polished—Fine India	.31	"	.35
Unpolished—Paper Makers	.20	"	.26
Tube Rope	.22	"	.27½
Wrapping	.26	"	.33½
Cotton	.70	"	—
(Hard Fiber)			
Mex. Sisal	.21	"	.24
Manila	.33	"	—
(Hemp)			
Polished Hemp	.63	"	—

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings—New White No. 1	.10½	@	.11
New White No. 2	nominal		
Light Silesias	.07½	"	.08
Black Silesias, soft	.06½	"	.07
New Unbleached	.10½	"	.11¼
Washable Prints	.06½	"	.07
Washable No. 1	.05	"	.05½
Blue Overall	.07½	"	.08
Cottons—According to grades—Washable Shredding	.03½	"	.04
Fancy Percales	.06¾	"	.07¼
New Black Soft	nominal		
Khaki Cuttings—Unbleachable Cotton Cuttings	.05½	"	.06
Bleachable Cotton Cuttings	.06½	"	.07
Men's Corduroy	.05½	"	.06
Ladies' Corduroy	.05	"	.05½
Cottonades	.05½	"	.06

Domestic Rags (Old)

(F.O.B. Eastern Shipping Point)

White No. 1—Repacked	4.50	"	5.00
Mixed White	4.00	"	4.25
White No. 2—Repacked	3.50	"	3.75
Thirds and Blues—Miscellaneous	2.25	"	2.50
Repacked	2.75	"	3.00
Roofing Stock—Foreign No. 1	nominal		
Domestic No. 1	2.00	"	2.05
Domestic No. 2	1.90	"	1.95
Roofing Bagging	1.90	"	1.95
Old Manila Rope	5.75	"	6.00

Bagging

(F.O.B. Eastern Shipping Point)

Gunny No. 1—Foreign	nominal		
Domestic	4.25	@	4.50
No. 1 Clean Bright—Sisal Strings	.04	"	.04½
No. 2 Clean Bright—Sisal Strings	.03	"	.03½
Sisal Jute	.02¾	"	.03
Scrap—No. 1	3.25	"	3.50
No. 2	1.75	"	1.85

VALLEY IRON WORKS CO • APPLETON, WISCONSIN

Slices and Head Boxes • Screw Presses • Micro-Mist Spray Dampeners • Laboratory Equipment
Pulp Washing Systems • High-Speed Beaters • Breaker Beaters • Vortex Beaters • Plug Valves
Flat and Rotary Screens • Thickeners • Deckers • Paper Markers • Roll-Headers

P.M. 32 POWDER

Bactericide and Fungicide

ODORLESS-NON-CORROSIVE-SAFE SOLUBLE

CONTROLS SLIME

Specifically developed for the pulp and paper industry, "PM 32 Powder" is completely effective in both Acid and Alkaline systems. **Only ½ to 1 ounce** of this powerful disinfectant per ton of stock, dry basis, is usually sufficient to control slime-forming micro-organisms in a pulp or paper system. Eliminates odor-forming Sulphur Bacteria.

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A. J. LUTH

FALLS CHEMICAL PRODUCTS COMPANY

OCONTO FALLS, WISCONSIN

"MILL EMPLOYEES STRONG FOR TREATED FELTS"

"TONNAGE RECORDS BROKEN TWO MONTHS IN ROW"

An unexpected reaction to the use of ORR-CHEM felts crops up at a large Boxboard mill and the superintendent writes, "Employees recently placed on incentive basis and are naturally strong for treated felts."

Obviously, these workers, operating under an employee incentive plan, would be favorable to equipment that enables them to make more money.

For instance, mill recently broke all production records, the superintendent freely crediting two ORR-CHEM bottom felts with the gain. Having increased the use of ORR-CHEMS, the mill promptly set a still better record the following month and again gave ORR-CHEMS the credit.

This mill knows from experience that ORR-CHEMS start up well, drain well, require fewer wash-ups, last longer and, therefore, reduce felt cost per ton and increase the tonnage of the machine.

Perhaps you also operate under an employee incentive plan. If so, the experience of this Board mill with ORR-CHEMS should afford you and all other superintendents food for thought.

¶When ordering your ORR-CHEM for trial be sure the dimensions are correct.

THE ORR FELT & BLANKET CO., PIQUA, OHIO

ORR-CHEM

Wool Tares, heavy	4.00	"	4.25
New Burlap Cuttings	6.00	"	6.50

Old Papers

(F. o. b. Phila.)

Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	@	$115.00
No. 1 Hard White Shavings, unruled	100.00	"	—
Soft White Shavings, one cut	90.00	"	95.00
White Blank News	60.00	"	65.00
Soft White Shavings	80.00	"	—
No. 1 White Ledger	75.00	"	80.00
Ledger, colored	60.00	"	65.00
No. 1 Heavy Books & Magazines	40.00	"	45.00
Overissue Magazines	nominal		
New Manila Envelope Cuttings	80.00	"	—
No. 1 Assorted Old Kraft	60.00	"	65.00
No. 1 Mixed Paper	20.00	"	—
Box Board Cuttings	20.00	"	—
Kraft Corrugated Cuttings	nominal		
Old Corrugated	30.00	"	35.00
Overissue News	40.00	"	—
No. 1 News	—	"	30.00

BOSTON

Old Papers

(F. o. b. Boston)
Mill Prices, Baled

No. 1 Hard White Shavings, unruled	7.00	@	8.00
No. 1 Hard White Shavings, ruled	7.00	"	8.00
Soft White Shavings, Mis.	6.25	"	6.50
No. 1 Fly Leaf Shavings	1.65	"	1.80
No. 2 Fly Leaf Shavings	2.00	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	1.25	"	1.50
Mixed Colored Shavings	2.50	"	2.75
New Manila Envelope Cuts, one cut	5.00	"	5.50
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	3.50	"	3.75
Mixed Kraft Env & Bag Cuttings	3.75	"	4.00
Kraft Envelope Cuttings	3.75	"	4.00
No. 1 Heavy Books & Magazines	2.50	"	2.60
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	4.25	"	4.50
Groundwood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	3.50	"	—
No. 1 Mixed Paper	—	"	.95
Overissue News	1.50	"	1.75
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.50	"	—
Jute Corrugated Cuttings	1.07½	"	—
Paper Strings	2.25	"	2.50

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	—	@	4.75
Domestic	—	"	4.75
Sisal Rope No. 1	6.00	"	—
Sisal Rope No. 2	5.50	"	—
Mixed Rope	5.25	"	—
Mixed Strings	2.00	"	2.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.00	"	3.50
Manila Rope—			
Foreign	(nominal)		
Domestic	6.25	"	—
Soft Jute Rope	5.00	"	5.25
Jute Carpet Threads	6.00	"	—
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	—	"	4.75
Domestic	—	"	4.87½
South America	5.25	"	—
Wool Tares—			
Foreign	4.50	"	—
Domestic	4.50	"	—
Aust. Wool Pouches	5.00	"	5.25
New Zealand Wool Pouches	5.25	"	5.50
New Burlap Cuttings	6.00	"	6.50
Heavy Baling Bagging	5.25	"	5.75
Paper Mill Bagging	3.50	"	3.75
No. 1 Roofing Bagging	1.75	"	—

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.07	@	.07½
Fancy Percales	.07½	"	.08
New White No. 1	.10	"	.11
New Light Flannelettes	.08	"	.08½
Canton Flannels, Bleached	.10	"	.11
Underwear Cutters, Bleached	.10	"	.11
Underwear Cuttera Unbleached	11	"	.12
Silesias No. 1	.07	"	.08
New Black Silesias	.05	"	—
Red Cotton Cuttings	.05	"	—
Soft Unbleached	.11	"	.12
Blue Cheviots	.07½	"	.08
Fancy	.06	"	—
Washable	.06	"	—
Khaki Cuttings	.06	"	.07
O. D. Khaki	.07	"	—
Corduroy	.03½	"	—
New Canvas	.06¼	"	.06⅝
B. V. D. Cuttings	.10	"	.11

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	2.00	"	—
No. 2	1.90	"	2.00
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	6.00	"	—

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

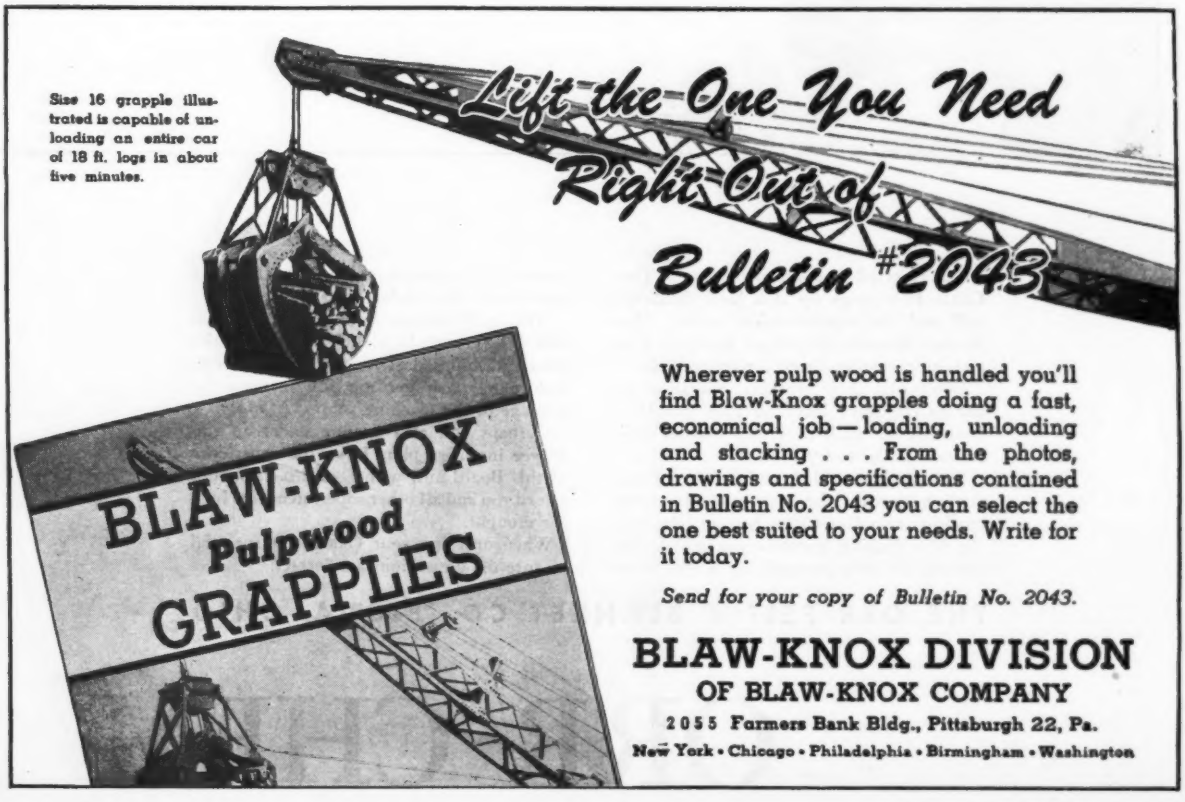
CHICAGO

Waste Paper

(F. o. b. Chicago)

Mill Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	$110.00	@	$120.00
No. 1 Hard White Shavings, unruled	105.00	"	115.00
No. 1 Soft White Shavings	80.00	"	95.00
No. 1 White Ledger	55.00	"	65.00
No. 1 Heavy Books & Magazines	40.00	"	43.00
White Blank News	43.00	"	49.00
Mixed Kraft Env. & Bag Cuttings	75.00	"	85.00
No. 1 Assorted Old Kraft	45.00	"	55.00
Overissue News	38.00	"	42.00
No. 1 News	30.00	"	—
No. 1 Mixed Paper	19.00	"	20.00
Old Corrugated	33.00	"	—
Mill Wrappers	25.00	"	29.00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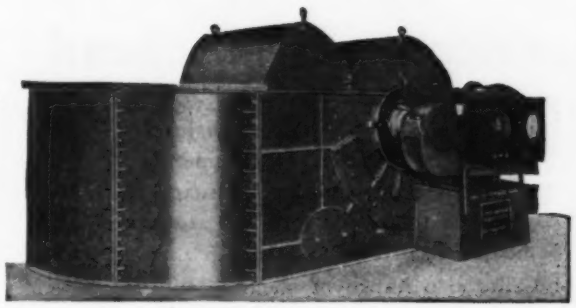
THE STANDARD BEATER OF THE PAPER INDUSTRY



The satisfactory results of the Jones-Bertrams Beater have been evidenced in mill after mill:

UNIFORM FIBRE TREATMENT — Practically 100 per cent circulation is accomplished, thereby producing uniformly refined fibres.

SHORT BEATING CYCLE — Roll and bedplate design results in producing a great amount of work in a very short time.

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LOW H. P. PER TON — Highly efficient utilization of horsepower.

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UNIFORM FIBRE TREATMENT
SHORT BEATING CYCLE
AUTOMATIC CONTROL
LOW H.P. PER TON

Jones

E. D. JONES & SONS COMPANY, Pittsfield, Mass.
Builders of Quality Machinery for Paper Mills.

Add a little Celite* to the furnish and you, too, will see a marked improvement in drying speed

Celite speeds drying because it reduces the moisture content of the sheet coming from the presses—and does not cake or shrink but maintains a path for the water to escape. This helps heavy sheets from slow stocks gain uniform density.

Celite helps the sheet *drain* freely—helps prevent checking and crushing at the couches, also reduces formation disruption at the nips.

During *formation,* Celite's porous, irregularly shaped particles provide better channels for the flow of water, and help keep the fibres more uniformly dispersed. This prevents premature agglomeration and gives the mat uniform drainage resistance so that the additional stock is deposited evenly.

Celite also improves machine speeds, increases retention and minimizes losses through the wire.

A Celite engineer will be glad to call and discuss the application of Celite to your particular needs. Write Johns-Manville, Box 290, New York 16, New York.

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Johns-Manville

CELITE PRODUCTS *for the paper industry*

PENN SALT

Liquid Chlorine

BECAUSE liquid chlorine is such an important agent in paper production, many leading paper manufacturers all over the country look to Pennsalt as their source of this vital bleaching chemical.

Pennsalt was a pioneer in liquid chlorine production in this country, and for nearly half a century has supplied a high quality chlorine to Industry.

PENNSALT PRODUCTS for the Pulp and Paper Industry: Liquid Chlorine • Bleaching Powder • Corrosion-Proof Cements • Anhydrous Ammonia • Acids • Perchloron* • Sodium Chlorate • Potassium Chlorate • Sodium Arsenite • Sodium Hypochlorite • Hydrogen.

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PENNSYLVANIA SALT MANUFACTURING COMPANY

1000 Widener Building, Philadelphia 7, Pa.

NEW YORK • CHICAGO • ST. LOUIS • PITTSBURGH • CINCINNATI • WYANDOTTE • TACOMA • PORTLAND, ORE.

MARKETS

BLANC FIXE—Active demand continues. Supply steadier as deliveries show some improvements. Pulp is currently quoted at $55 per ton, in barrels, car lots, at works; the powder is quoted at $67.50 per ton car lots.

BLEACHING POWDER—Current supplies adequate to meet most demands. Shipments sometimes delayed. Quotations are unchanged. Prices on bleaching powder range from $2.75 to $3.75 per 100 pounds.

CASEIN—Current prices on processed acid precipitated casein are reported around 32 to 36 cents per pound for domestic grades and 34 to 38c for Argentine f.o.b. shipping point.

CAUSTIC SODA—Shipments are behind schedule. Cut-back production further reduces stocks. Solid caustic soda is reported at $2.50 per 100 pounds; flaked and ground offered at $2.90 to $3 per 100 pounds, car lots, at works.

CHINA CLAY—Demand continues heavy as supply remains tight. Domestic filler clay is currently $8.50 to $9 per ton, car lots. Coating clay is $12 car lot and $16 less car lot. Imported clay is $20 to $22 per ton, car lot, export warehouse; and $45 less car lot for powdered.

CHLORINE—Market tight as demand continues to exceed output, stocks low. Lack of tank cars continues to hamper deliveries. Quotations unchanged. Chlorine is currently quoted at $2 to $2.25 per 100 pounds.

ROSIN—Gum rosin in drums, per 100 pounds net, in yard New York, car lots, B, D, $10.80; E, F, G, H, I, K, M, $11.80; WG, $12.05; WW, $12.05. Wood Rosin, per 100 pounds l.c.l., f.o.b. N Y., B, $7.45; FF, $8.95; G, H, I, $10.25; WW and X, $10.45.

SALT CAKE—Demand continues to increase with supplies showing little improvement. Prices remain unchanged. Domestic salt cake is quoted at $20.00 to $24 per ton in bulk. Chrome salt cake is quoted at $16 per ton.

SODA ASH — Demand active as supplies continue short, previous orders filled. Contract orders prevail at the same high levels. Current prices, car lots, per 100 pounds, are as follows: in bulk, $1.08; in paper bags, $1.20; and in barrels, $1.60.

STARCH — Supplies are showing steady improvement. Previous orders filled. Starch prices continue strong with the pearl grade quoted at $4.67 per 100 pounds; powdered starch at $4.78 per 100 pounds, car lots, Chicago.

SULPHATE OF ALUMINA—Demand active, supply fair. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.30 per 100 pounds, in bags, car lots, f.o.b. works. The iron free is quoted at $1.95 to $2.25 per 100 pounds, in bags, at works.

SULPHUR — Strong seasonal demand is reported with stocks plentiful to meet all requirements. Annual contracts are quoted at $16 per long ton, f.o.b. mines; the price f.o.b. at Gulf Ports is $17.50 per long ton.

TALC—Domestic and French grades are moving in fair volume with prices steady. Domestic grades are currently quoted at from $16 to $30 per ton at mines; Canadian at $35 to $45 per ton. All prices in car lots.

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A-10

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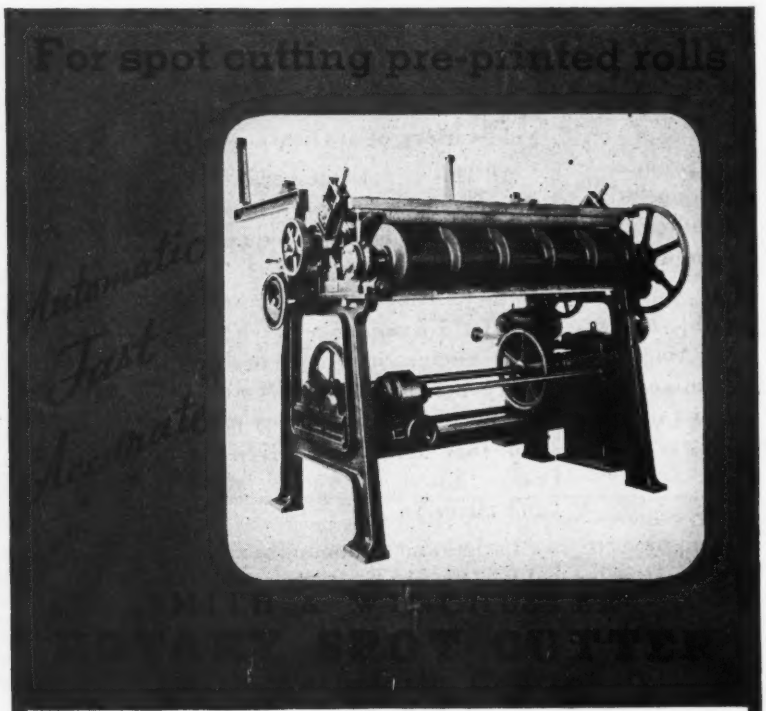
P. C. Cellugum Useful In Sizing, Dyes, Coatings

NEW YORK—Paper Chemicals, Inc., chemical manufacturing division, Mutual Paper Co., Inc., have recently developed *P. C. Cellugum No. 8448,* which is a plasticized, water soluble gum possessing properties as a thickening and suspending agent, as a protective colloid in oil-in-water emulsions, stabilizer, and emulsifying agent, film former, and adhesive compound.

In the manufacture of paper this product is used in sizes, as a colloidal suspending agent of clays and fillers, for dye solutions, pigment pastes, as a greaseproof coating for heavy stock papers or paperboards, in water repellent and fire retardant coatings. The product is supplied in 55 gallon drums, 5 gallon cans and 1 gallon cans.

Bristol Lists Offering For Immediate Delivery

WATERBURY, Conn.—A new bulletin listing more than 150 different items maintained in stock for immediate delivery has been published by The Bristol Company, manufacturers of recording and controlling instruments for industrial processes. The new bulletin W1811 lists recording thermometers, pyrometers, pressure gauges, voltmeters, ammeters, and pH recorders.



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Liquid Conditioning Condenses Water Treatment Facts

LINDEN, N. J.—A recently completed condensed catalog of the Liquid Conditioning Corporation, 114 East Price Street, gives concise information on the most modern methods and equipment for treatment of water, purification of process liquids, and recovery of valuable substances from waste liquids. The catalog outlines the many different types of Liquon units for removal of air and other gases, sediment and other suspended impurities, hardness and alkalinity, and other dissolved impurities such as iron, silica, etc., from water. Also described are the various types of Liquon equipment for special purposes such as in beverage plants, paper mills, laundries, textile plants, municipalities, etc., and for cooling-water treatment, treatment of industrial liquids and for continuous boiler blow-off.

The catalog is illustrated by diagrams showing the principles of design and operation of representative type of Liquon equipment. The helpfulness of the catalog is further increased by tabulations of the various impurities found in water, their effects, limits of tolerance in different applications and methods of removal. In addition, a chart of particular interest graphically shows the results of treating a given water by six different water-conditioning methods.

The corporation reports appointment of L. S. Luther & Company, Washington, D. C., as engineering sales and service representatives in the District of Columbia, most of Virginia, and most of Maryland.

IPI Creates Unique Package For 1947 Packaging Conference

NEW YORK — IPI has created a unique package of unusual content for this year's Packaging Conference in Philadelphia. Outwardly the package is a small black box with bright spectrum colors running through the IPI's around the sides. Printed on top and bottom are the legends "Color Control Depends on Accurate Measurement" and "A Guide to Printing Inks for Packaging."

Inside the box is a vest pocket size booklet which gives in capsule size under fourteen headings a quick index to all the important factors in the selection and application of inks to package printing. Finally, the booklet is wrapped around a two ounce plastic reminder that accurate measurement is important in some social arts, too.

The little 16-page booklet has been termed a vest pocket encyclopedia of package printing hints — and so it is. IPI is printing only a limited number of booklets but will honor requests for free copies as long as the supply holds out. Requests should be sent to International Printing Ink, 350 Fifth Avenue, New York 1, N. Y.

STEAM

FOR PULP AND PAPER MILLS SUPPLIED BY THE VU UNIT

The C-E Steam Generator, Type VU, may be said to carry the "seal of approval" of the pulp and paper industry. Many of the most prominent names in the paper field are numbered among its users. A representative sample of companies that have purchased VU Units appears in the panel at the right.

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Representative list of pulp and paper companies that have purchased VU Units.

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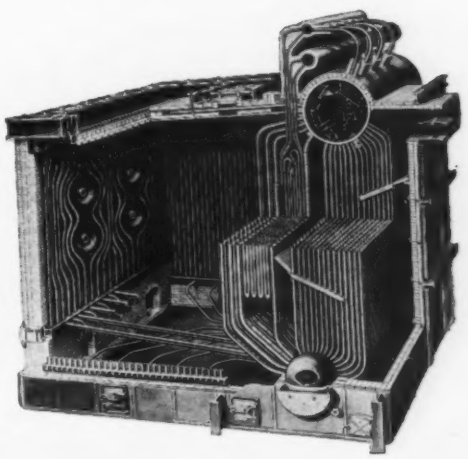
Canadian International Paper Co.
Chemical Paper Mfg. Co.
Chesapeake Corporation
Fraser Companies, Ltd.
Hammermill Paper Company
Kalamazoo Vegetable Parchment Co.
Kimberly-Clark Corporation
Macon Kraft Corporation
Marathon Paper Mills of Canada, Ltd.
National Container Corporation
Nekoosa-Edwards Paper Co.
The Northwest Paper Company
St. Regis Paper Company
Scott Paper Company
Southern Paperboard Corp.
Southland Paper Mills, Inc.
S. D. Warren Company



C-E

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Booklet Describes Surveys Made from the Air

PHILADELPHIA — A publication describing how large areas of ground can be surveyed from the air and topographic maps made to 2-, 5-, 10-, or 20-foot contours from aerial photographs at a considerable saving over the cost of conventional ground surveys has just been issued by the Aero Service Corporation, 236 E. Courtland Street. The publication is a symposium of articles by well known highway officials describing how this type of contour map developed from aerial survey photographs has been used with great economy of money and time in determining the most feasible location for highways. It is pointed out that the same basic method is applicable to other types of survey work for locating plants, mining operations, rail and transportation lines, flood control and reservoir surveys and many other purposes.

This aerial survey technique, known as the Brock Method, was used extensively in surveying plant sites before and during the war. Its use by industry is now being resumed. The publication referred to is titled "Aerial Surveys Aid Highway Location." Copies are available by addressing Aero Service Corporation.

PAPER EXPORT

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Bailey Bulletin Offers Feed Water Control Data

CLEVELAND—New performance data is included in Bailey Meter Company's revised Bulletin 105-B, "Bailey Three-element Feed Water Control." This bulletin lists a number of advantages of the three-element system, shows chart records illustrating operation under difficult conditions and gives a large list of users.

Shown is a Bailey Control Board for quick pick-up of load from 60,000 lb. per hour to 690,000 lb. per hour. Besides three-element feed water control measuring equipment, this board also carries instruments for the control of Cumbustion, Superheated Steam Temperature, Fuel Oil Temperature and Air Heater Temperature.

Chart records of dump load tests conducted on a 400,000 lb. per hour capacity, pulverized coal-fired boiler are shown. These tests, in which loads up to 45,000 kw were dumped, show that the Steam Flow and Water Flow fell as much as 300,000 lb. per hour. The water level, however, varied less than two inches and was always visible in the boiler drum guage glass.

Other chart records illustrate the operation of an installation on a 225,000 lb. per hour capacity boiler. Excess pressure is not controlled, yet, the level varies less than two inches at any time.

A third set of chart records show that the level on a boiler with a fluctuating load varies less than four inches total variation. The load fluctuates from 90,000 to 150,000 lb. per hour.

Ladish Opens Office In Atlanta

CUDAHY, Wis. — Ladish Co. has announced the establishment of a new district office in Atlanta, Ga., and the discontinuation of its New Orleans office. The new office will be located at 452 Spring Street, N.W., and will serve the southeastern territory. W. W. Bowie, formerly manager of the New Orleans office, has been appointed manager of the Atlanta office to direct the sale of the complete line of Ladish controlled quality seamless welding fittings, Ladish forged steel fittings and Ladish forged steel flanges in this territory.

ADSCO Bulletin Gives Metering Facts

NORTH TONAWANDA, N. Y.—A new 12-page, illustrated ADSCO Bulletin No. 35-80B on the ADSCO Rotary Condensation Meter gives complete details of construction and installation on seven sizes of meters with capacities from 250-12,000 pounds of condensate per hour as manufactured by the American District Steam Company. This meter is widely used by district heating companies, and industrial plants to determine steam consumption per building or by departments.

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ATTENTION
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IN PART

Our Industry is in large measure a world industry and cannot isolate itself from the problems of other nations. Europe's economic confusion has resulted in a diversion of imports of woodpulp to other outlets and away from mills in this country. The hundreds of thousands of tons involved have had a material bearing on production ranges in this country, and no one can prophesy with confidence as to how long this condition will continue.

High demand and accumulated shortages have brought into being a seller's market for pulp and paper products. It is a temptation to "Get while getting's good," but a seller's market always involves danger. Danger of over-expansion, over-pricing, and of excessive wage structures. We know by experience that profits tend to be far more unstable than increased costs. High costs have a most painful stability. It is a time for caution and restraint. A pronounced inflationary trend invites a resumption of the government controls from which we have but recently been relieved. When restraints are needed it is far better to have them self-imposed and voluntary rather than mandatory and thrust upon us by bureaucratic action.—*From the annual report of Reuben B. Robertson, President of the American Paper and Pulp Association.*

Production Ratio Report*

Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1947		Corresponding Weeks—1946	
February 22	105.9	February 23	98.0
March 1	108.5	March 2	101.8
March 8	104.5	March 9	103.4
March 15	107.2	March 16	104.1
March 22	105.8	March 23	105.0
March 29	*109.6*	March 30	104.9

COMPARATIVE MONTHLY SUMMARIES

1946						1947	
Jan.	94.7	May	100.7	Oct.	106.4		
Feb.	98.4	June	104.6	Nov.	105.5	Jan.	102.1
March	104.4	July	94.0	Dec.	97.0	Feb.	105.9
April	102.7	August	104.7	Year Avg.	101.1	March	*106.5*
		Sept.	101.3				

COMPARATIVE YEARLY SUMMARIES

	1940	1941	1942	1943	1944	1945	1946	1947
Year to Date	85.7	89.2	103.6	88.6	88.4	88.4	98.6	*105.2*
Year Average	85.6	97.4	90.4	87.8	88.1	89.4	101.1	

PAPERBOARD OPERATING RATIOS†

Current Weeks—1947		Corresponding Weeks—1946	
February 22	103	February 23	97
March 1	102	March 2	98
March 8	102	March 9	99
March 15	104	March 16	100
March 22	103	March 23	99
March 29	*102*	March 30	100

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1946	90	91	100	99	94	97	89	99	96	100	99	92	96
1947	99	103	*101*										

*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

†Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

EDITORIAL

Arbor Day

Though its date may vary according to the section or the state in which it is observed the incidence of Arbor Day during April for most states brings around for fresh emphasis an event in which the pulp and paper industry has a special interest. According to the Forest Service of the United States Department of Agriculture some two hundred million seedlings are to be distributed this year, practically a prewar quota. But according to Lyle F. Watts, chief of the Forest Service, even more intensive observation of the day could be made profitable to the nation's economy if it were also joined to an increasing vigilance against unwise depletion of forest resources.

According to reports to the Forest Service, Georgia proposes the largest production of seedlings among the States this year, the State program calling for an output of 32,000,000. The second largest program is that of New York which plans production of 21,076,000, while the third is that of Mississippi with 20,000,000. Texas plans call for production of 14,285,000, while Wisconsin and South Carolina each expect to produce and distribute 13,000,000. The program in Louisiana calls for 11,000,000 and that in Florida for 10,000,000.

Of the 81,127,000 fledgling trees produced by the cooperating nurseries in 1946, some 43,500,000 were distributed to farmers. The remainder were used to replant State and other public lands and holdings of non-farm owners. Roughly three-fourths were seedlings taken direct from their original nursery bed for planting while the remainder were transplants—that is, were grown for a year or two in a second bed before being set out in the plantation. Prices to farmers varied according to species, cost of seed and local nursery facilities and conditions, and ranged from $1.50 a thousand for certain species in Alabama to $25 a thousand in Wyoming.

This year marks the diamond jubilee, or 75th anniversary of Arbor Day which was first observed in Nebraska April 10, 1872. On that day, pioneers led by Julius Sterling Morton, who was later U. S. Secretary of Agriculture under President Cleveland, planted more than a million trees on the treeless plains of the Cornhusker State. Born at Adams, N. Y., April 22, 1832, Morton attended the University of Michigan and went west soon after Nebraska territory was opened up in 1854. In 1885, the Nebraska Legislature changed the date of Arbor observance to Morton's birthday.

Give and Take

As these words are made ready for the press the cables may be expected to warm up with "inside" and "background" stories under Geneva date lines from the conferences that get under way in that city on April 10 under the general heading of reciprocal trade agreements. Almost everything that is in short supply in the world is likely to come up for some bargaining, and evidence already appears to indicate that a lot of people want paper. It may be expected that most peoples will be willing to ship something at a high price if they can get something in return at a low price. We may not at this time forecast anything that will happen; we may be sure that the word paper will appear often during the course of negotiations over the coming weeks.

Effort Not Wasted

In a world that for too many recent years has schooled itself to look to the future for benefits from present efforts, even the utterance of a few kind words, at times, has been cause for rejoicing. The National Council for Stream Improvement is thereby entitled to take a bow for the appreciation of its efforts in words of praise lately bestowed on its project in a report to the New York State Senate and Assembly by a special committee appointed to study problems of pollution abatement.

"It is significant," says the report, "that individual industries and manufacturing groups have demonstrated their willingness to invest in waste treatment research. This attitude of industry augurs well for the future of streams now suffering from degradation by process wastes. . . . . Industry has demonstrated the value of cooperative research. The canning industry, the pulp and paper industry, the oil industry, the distillery field and the textile trade have all evolved economical, effective methods of wastes treatment. State health officials have cooperated with these industrial groups in many parts of the country; the New York State Health and Conservation Departments can be counted on to give similar support."

Modestly enough the National Council had tucked this approval of its aims at the bottom of the third page of an interim report to members of its activities over the past several months—a severely edited report of meetings attended, conferences staged, projects advanced and state agencies contacted. The report might well have been longer without sacrificing anything of interest, but in its present abridged form it presents a picture of multiple activities directed toward a single end—the promotion of better relations between those who must use the streams to carry away enormous quantities of industrial waste process water, and those who have to live beside those streams.

W. L. Cook

Editor

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SECTION OF THE

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OF THE PULP AND PAPER INDUSTRY

122 E. 42nd ST., NEW YORK 17, N. Y. Edited By R. G. MACDONALD, Secretary

Progress Report on Continuous Refining of High Yield Pulps at High Temperatures and Alkalinity*

By D. Manson Sutherland[1]

Abstract

Tests on single rotation disk refining of high yield kraft pulps directly from a blow tank show that 65% yields are possible while attaining a bursting strength test of 145% at a freeness of 700 to 715 ml. Canadian Standard. Tests on semichemical pulps show that a yield of 86% is possible but the maximum burst development is approximately 40% at 700 ml. There are indications that still higher yields from modified kraft cooks are possible but further progress on a commercial scale will have to be made before determining the point where high yield adversely affects burst for liner and other sheets requiring high test.

At present savings of about $4.00 per ton of pulp are being realized. These savings will pay for the capital investment within the first year of operation.

Owing to the continued rise in the cost of wood the subject of increased yield is again under serious, if not urgent, consideration. The species of wood, method of cooking, and chemicals used are not reviewed in this article since many papers have already been published on these subjects.

The technique of refining high yield pulps has not been disclosed to any extent, consequently this paper outlines the common practice and discusses the latest results of refining of high yield kraft pulps on a commercial scale.

High Yield Sulphite

A single rotation disk refiner was first used in developing high yield sulphite. Increased yield in sulphite pulps was the subject of a paper delivered by Dr. H. W. Rowley *(1)* before the Technical Section of the Canadian Pulp & Paper Association in Montreal in January 1937. This high yield pulp was continuously refined at approximately room temperature and no attempt was made to use high temperatures although it was considered to be advantageous.

The use of this process was discontinued when the demand for sulphite pulp caused by World War II induced newsprint mills to turn their excess sulphite capacity over to the production of sales sulphite, i.e. conventional easy bleaching or low yield pulp. Since most mills did not have separate systems for high and low yield sulphites, the low yield was accepted during the war emergency. Despite the savings reported in Dr. Rowley's paper, which have since risen due to increased cost of wood, no further progress in high yield sulphite has been made, although commercial yields of 63% had been reached.

In the commercial production referred to, no attempt was made to eliminate knots before refining or in other ways reduce the dirt count except by conventional screens. Some criticism of high dirt count apparently prevented the general production of high yield sulphite for newsprint. In the meantime, large potential savings have been neglected in Canada which is by far the largest producer of sulphite in the Western Hemisphere.

High Yield Sulphate Pulps

In view of the production experience on high yield sulphite, discussions arose regarding the possibilities of applying the use of refiners in production of high yield sulphate pulps. It was thought that advantages might be obtained by refining the pulp directly from the blow tank so as to take advantage of the high temperature and alkalinity.

A test installation was made in a southern kraft mill in 1937. The pulps produced by hot and alkaline refining showed good strength development with practically no drop in freeness or harmful effect upon the operation of the vacuum washers but a decided effect was noticed on all board and paper machines. As soon as the hot refined stock came over to the paper mill, it was necessary to back off all jordans because the stock acted slower on the wires.

Unfortunately difficulties were experienced with tramp metals which severely damaged the stainless steel disks. Owing to mill conditions it was not convenient to install equipment to remove extraneous materials so the tests were abandoned.

Sufficient favorable indications were noted, however, to justify additional tests at a later date. World

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 24-27, 1947.

[1] Sutherland Refiner Corp., Trenton, N. J.

War II interfered with plans to resume tests and it was not until March 1945 that efforts were renewed in a Canadian kraft mill producing fourdrinier kraft liners and corrugating board. A paper entitled "Kraft Brown Stock Refining at Bathurst Power & Paper Company" by Gordon F. Allo *(2)* was presented before the Technical Section of the Canadian Pulp & Paper Association in Montreal, January 1947 giving actual operating data which will be repeated to some extent, thus bringing this progress report up-to-date.

General Layout

The only major change in usual pulp mill construction is to install the refiners in the system between the blow tank and the washers. A magnetic separator is installed ahead of the refiners and minor changes in design and operation of the washers may be advisable.

1. Digesters. Conventional design. Cooks are modified by changing pressure, time, and chemicals to obtain a harder cook.

2. Blow Tank. The kraft cook is blown into a vertical "blow" tank equipped with an agitator. The consistency is regulated by the power input to the motor driving the agitator and hot black liquor is used for dilution. Automatic regulation is necessary to control consistency because experience in continuous refining has shown that uniformity of strength and quality is affected by changes in consistency. Preliminary commercial tests were made in 1945 but owing to war restrictions it was impossible to obtain the consistency control devices until February 1946, consequently, this paper refers only to data obtained since that time.

Tests made on consistency of brown stock from the blow tank show variations taking place when a blow is entering the blow tank and, particularly, if the tank is three-quarters full.

	Between Blows	During Blow	Average
Consistency:	3.10%	3.65%	3.38%

The effect of consistency on refiner operation and its bearing on elimination of screenings and development of bursting strength and tear have not been determined but the study is now underway.

3. Magnetic Separator. The regulated stock is drawn off approximately two-thirds of the way up the bottom cone of the blow tank, consequently a large part of heavy metals fall down to the bottom of the cone and are removed at suitable intervals. A large stationary electro-magnet is installed between the blow tank and the refiner supply pump while a large jordan has been used to smash unusually large pieces of partially cooked wood and to act as a further trap for tramp metals.

Recently changes in the magnet box have been made and weekly inspections show no tramp metal passing into the jordan. There is every reason to believe that the jordan can be eliminated thus saving 275 hp.

4. Single Rotating Disk Refiners. Two 48-inch frame units were originally installed equipped with 42-inch disks and, after 6 months' operation, one more unit was added to cope with the higher tonnage then obtained due to increasing yield. The output is discharged into a tank which, in turn, supplies refined stock to the vacuum rotary washers. Jordan and refiners are driven by 350 hp. 220 volt synchronous motors at 450 r.p.m.

5. Washers. Current experience on northern kraft and earlier operations on southern kraft have not revealed any operating difficulties from foaming

TABLE I

March, 1946.
Canadian Standard Freeness—TAPPI Cl. number.
One jordan backed off.
Two refiners—48-inch frame, 42-inch disks. Capacity approximately 110 tons each per day or total of 200 tons.

	Jordan	No. 4 Refiner		No. 5 Refiner	
	Amperes on Motor	Inlet Pressure	Amperes on Motor	Inlet Pressure	Amperes on Motor
9:00 A.M.	54	33	23	29	27
9:30 A.M.	53	32	23	29	28
10:00 A.M.	53	32	23	27	27
10:30 A.M.	53	32	23	25	26
11:00 A.M.	53	30	23	23	26
11:30 A.M.	54	29	24	21	26
12:00 A.M.	53	25	23	20	26
Av.	53.3	30.4	23.1	24.9	26.6

STOCK TESTS
0.007-inch Laboratory Screen

From	Tail-ings, %	Knots, %	Total Screen-ings, %	Screened Free-ness, ml.	Stock Strength	Av. Cl. No. at K.H.B.
No. 4 Refiner	4.47	0.81	5.28	703	0.70	12.07
No. 5 Refiner	3.98	0.40	4.38	717	0.68	12.07

attributable to hot stock refining although some problem of this sort had been anticipated. Minor modifications in construction and operation of the washers will eliminate any abnormal conditions which may arise.

Either screw presses or rotary washers are satisfactory for use with hot refined stock. Up to the present time no experience has been gained relative to the use of diffusers for washing high yield stock.

Operating Data

The size of a refining unit is described by the diameter of the disks used—for instance, 32-inch, 42-inch, and 48-inch. The 48-inch-unit weighs approximately 25,000 pounds and is operated at 450 r.p.m. which gives a peripheral speed of 5655 f.p.m. The capacity can be varied by increasing or decreasing inlet pulp pressure and the degree of refining varied likewise. The mill in which tests are being made is not equipped with screens, consequently it is necessary to operate with a minimum of screenings which cause crush marks in the finished board. The development of high burst in pulp delivered to the paper mill is not important at this time compared to the increased yields obtained.

Capacity of Single Disk Refiners

As already noted, 42-inch diameter disks will produce from 80 to 100 tons per day but it is considered best engineering and operating practice to use large units in a pulp mill. The temperature of approximately 200° F. necessitates cooling of bearings and elimination of unnecessary friction. A specially designed unit using 48-inch diameter disks has been tested and the results of preliminary tests are shown below:

Inlet Pulp Pressure, p.s.i.	Power, hp.	Estimated Capacity per Day, tons	Screen-ings, %	Cl. No.	Burst-ing Strength, pt./lb.	Freeness Cana-dian, ml.
8	235	150	5.02	12.5	1.25	715

Stuff Properties

To distinguish between raw pulps and refined pulp the term "stuff properties" is used to denote refined pulp characteristics. From the data presented above it will be noted that refined hot brown kraft pulps have an unusually high burst with a high freeness. In order to produce the same bursting strength with washed pulp at ordinary room temperatures, it would be necessary to reduce the freeness by approximately 100 ml., i.e. down to 615 ml. Canadian standard, while using much more power than the approximately 2 hp. days per ton used with hot and alkaline pulp.

Because of the many changes in cooking time and

the use of less alkali, it has not been possible to prepare accurate data showing the effects of high yield pulp on the strength and other sheet properties at the reel but the trend shows definite improvement in bursting strength. Increased machine speed is obtained since the drainage rate on the wire is much faster with a higher freeness and the sheet dries more rapidly with less steam.

Judging from commercial operations up to this time, it is thought that higher yields with high bursting strength can best be obtained by decreasing temperature and chemicals but with increasing time. This was successfully done in obtaining high yield sulphite but further tests will have to be made to prove that sulphate pulps react the same way.

Savings

Yield. Commercial operations over a period of 8 months show an increase of 8% in yield but with additional operating experience, it is confidently expected—based on results of spot tests—that the yield of air dried pulp figured on moisture-free wood will be raised from 50 to 65%; the ultimate figure depending on a number of factors including cooking technique and refiner operation.

Chemicals. Cooks averaging 15 Cl. No. have been produced and some cooks with a Cl. No. of 16.5 have been passed through the hot brown stock refining system without difficulty. This compares to an original Cl. No. of 9 to 11 with an average of about 10. Higher yields have been obtained by reducing the charge of active alkali as Na_2O from 540 to 460 pounds per ton of air dried pulp.

Steam. The cooking time has been reduced approxmately 15% with consequent reduction in steam consumption per ton of air dried pulp but, as yet, no data on actual savings has been accumulated.

Recovery Plant. Increased yield due to reduction in chemical charge reduces the load on the recovery plant to a corresponding extent. This feature may be very useful to any kraft mill which is operating its recovery plant under an overload condition with additional savings arising due to more efficient operation at rated capacity.

Increased Mill Capacity. The increased yield, smaller chemical charge and shorter cooking time have combined to increase the average pulp production from 210 to 250 air dried tons per day, thereby reducing costs proportionately.

TABLE II

September, 1946.
Canadian Standard Freeness—TAPPI Cl. number.
One jordan backed off.
Three refiners—48-inch frame, 42-inch disks. Capacity 80 tons each per day.

		No. 4 Refiner		No. 5 Refiner		No. 6 Refiner	
Time (a. m.)	Jordan Amperes on Motor	Inlet Pressure	Amperes on Motor	Inlet Pressure	Amperes on Motor	Inlet Pressure	Amperes on Motor
9:00	55	28	31	27	32	24	33
9:30	55	31.5	32	30	32	26.5	32
10:00	57	29.5	32	28.5	33	25.5	33
10:30	54	31	32	29.5	32	26	32
11:00	57	29.5	30	29	30	24	31
11:30	55	29	31	27.5	33	24	33
Av.	55.5	29.7	32.3	28.6	32.0	25.0	32.3

STOCK TESTS

	0.007-inch Laboratory Screen					
From	Tailings, %	Knots, %	Total Screenings, %	Screened Freeness, ml.	Stock Strength	Av. Cl. No. at K.H.B.
Jordan	10.80	1.96	12.76	710	0.92	14.00
No. 4 Refiner	3.01	0.10	3.11	708	1.12	14.00
No. 5 Refiner	2.65	0.09	2.74	708	1.20	14.00
No. 6 Refiner	2.21	0.08	2.29	708	1.19	14.00

Savings in Dollars. Costs will vary from mill to mill but it is conservatively estimated that the savings will not be less than $4.00 per ton of pulp and even more per ton of board because of improved paper machine operation and reduced steam requirements.

Disk Life. After 8 months' continuous operation, the wear is negligible and it appears that the disks will deliver a uniform quality and quantity for 1 year or even longer before recutting of the disks will become necessary. The stainless steel disks are thick enough to be regrooved annually for approximately 15 years.

Semichemical Pulps

Yields higher than 65% are obtainable by using quick methods of cooking such as in B.K. reaction chambers. Others use neutral sodium sulphite in rotary or stationary digesters. Open tanks are also used to soften wood chips. In all cases it is necessary to reduce the softened chips down to small fiber bundles before the pulp can be further refined. Some installations utilize hammermills and others use single or double rotation attrition mills. The pulp thus made is then passed through jordans before going on the wire. In some mills other fibers such as old kraft containers are added.

In general it can be said that full advantage of high temperature and alkalinity is not obtained since there are too many steps involved which cause loss of heat.

Defibrator Chemipulper

This process is described in a paper by Arno W. Nickerson *(3)*. Practically all the available heat and alkalinity are retained during the preliminary refining treatment. Further refining by a single rotation refiner has been commercially used on chemipulper stock for over 1 year with the following results:

Capacity, tons	Freeness, ml.	Bursting Strength, points	Power, hp.
50	725	16.00	200

This stock is mixed with old papers and passed through one jordan before going to the board machine wire. Laboratory beater tests based on TAPPI standards were made on this pulp to determine optimum results which are as follows:

BEATER TESTS

Initial Time, min.	Bursting Strength	Tear	Seconds Freeness Canadian
0	...	65	790
15	15.3	144	750
30	34.7	206	725
45	47.6	208	600
60	63.7	211	450
75	72.0	197	330

Conclusion

Results of commercial production of hot refined high yield sulphate pulp demonstrate that higher yields are within reach of the mill operator. While substantial savings are now being obtained, improvements in the process which are already under way indicate that even greater savings are possible. Besides the current substantial cash savings, perhaps the most important savings in the long run will arise from the conservation of wood resources available to the mills. Present savings will pay for the capital investment in refiners and equipment during the first year of operation.

Literature Cited

1. Rowley, H. J., Canadian Pulp & Paper Assoc., Technical Section Proceedings, 44, 1937.
2. Allo, Gordon F., Canadian Pulp & Paper Assoc., Tech. Section Proceedings, 1947.
3. Nickerson, Arno, *Tech. Assoc. Papers*, 461, 1941.

Paper Machine Maintenance*

By E. D. Beachler[1]

Abstract

A brief outline is given on paper machine maintenance with emphasis on lubrication. A card system for recording maintenance items is advocated.

All know that the ideal paper machine would not require any maintenance. From a practical standpoint, however, it has not been possible to reach this ideal because of materials available and the fact that moving parts ultimately will wear. It has been found that duplicate machines operating on similar products will stand up far better in one mill than in another. This difference is due mainly to the difference in maintenance the two machines receive.

From a machine design standpoint, the machinery builder attempts to use the best of materials in each place along the machine which would give the most adequate protection to the part involved and with the best factor of safety. It is well known that a number of the later fourdriniers are being made of noncorrosive materials as far as practicable. This means using stainless or monel clad parts with numerous bronze castings, depending on each particular application. A good deal of experimental work has been done with other types of protective coverings including various synthetic and rubber covers.

Inspection

In designing a machine an attempt is made to have the various parts made so they can be serviced as easily as possible. By making the various parts easy to get at and inspect, the amount of maintenance time can be reduced materially. This eliminates the necessity for extended shutdown periods for servicing the various items on a paper machine.

In attempting to reduce this shutdown time, a number of parts have been made so they can be serviced while the machine is in operation. As an example, with the high speed steam fit it has been necessary to have the machine out of operation for a period in order to change the carbons and sylphons used with this type of steam fit. A new design is available which will permit replacing carbons or siphons with the machine in operation. The only lost production would be due to shutting the one drier off on which work is being done. In the end this will mean that a good deal of time will be saved in servicing this one particular item. All know carbons will wear ultimately and have to be resurfaced or replaced.

In order to properly protect the numerous antifriction bearings which are required on a high speed machine, it has been necessary to go to complete enclosures with numerous seals. These enclosures are used on most of the main items on a paper machine including antifriction bearings, shake units, enclosed gear units, the enclosed drier section drive, and practically all of the parts on the machine which either rotate or oscillate during machine operation. This protection means that a particular part is not normally subject to failure from corrosion, water, or dirt from the paper machine operation, but it also means that the particular part is not open for easy inspection under most conditions.

For that reason the men taking care of the maintenance of paper machines should be of the type who are interested in knowing what is behind the enclosures as well as being able to diagnose any trouble as it may start. Machine builders are glad to provide any data necessary on particular parts so that adequate information is available for servicing. During operation if necessary corrections are made as soon as trouble is apparent, the failure will be minimized and can often be corrected before any lost time is occasioned for the paper machine.

In order to obtain the best use of preventive inspection, it is suggested that a system be set up so data can be accumulated on the operation of each major unit in the paper machine along with any history of maintenance in the machine life. To accomplish this end it is suggested that each machine be assigned a number and each part a sub number which can be recorded on a series of index cards or its equivalent. This will allow the identification and recording of each major item of maintenance as it occurs. It will assist the Cost Department in calculating the actual cost of any repairs as well as lost time due to any particular item. In case some unit has excessive time for maintenance, proper steps can be taken to correct it. In cases of excessive maintenance, it is always better to replace the unit completely or to change its design to prevent recurrence of trouble.

In some cases maintenance can be set up periodically during the year, say once, twice, or three times a year, in which a major amount of work can be done. This can include any necessary repairing, any roll grinding required, as well as inspection of major bearings with any replacement necessary. Particularly in the case of periodic roll grinding, excellent results can be obtained since a roll which is maintained in good condition will not be subject to excessive marking. A roll ground regularly will give a good finish, longer life, and better operating conditions. In many cases a grinding schedule can be worked out to insure good roll operation by grinding all the rolls in time before they reach too poor a condition.

One of the most important items to reduce maintenance is to insure that the highest grade of lubricant is used throughout the machine. It is very good insurance to use only the best lubricant because of the fact that the price difference between the cheapest and the most expensive is so small that the difference is more than repaid if any failure is prevented. It is not only the cost of the parts themselves which would be saved but any lost production on the machine caused by the down time required to replace any failed parts.

Lubrication

In designing paper machinery an attempt has been made to adjust bearing construction so that the number of lubricants required for various applications can be reduced. In reducing the number required for a machine it will be easier for the lubrication man to stock the right lubricants and to make

*Presented at the meeting of the Technical Association of the Pulp and Paper Industry held at the Pfister Hotel, Milwaukee, Wis., Oct. 24, 1946.

[1]Assist. Chief Eng., Beloit Iron Works, Beloit, Wis.

sure that the right one is used in each place. A grease of the lime-base type is used for all grease lubricated bearings on the wet end of the machine. Where dripping from the housing is to be eliminated on the dry end of the machine, a soda base type of grease is used. For all oil lubricated bearings the best grade of mineral cylinder oil of a viscosity suitable for the operating conditions of the particular bearing is used. In most cases this is an oil with a viscosity of 600 seconds at 100° F. There are requirements for a special mild inactive type of EP lubricant where hypoid gears are used. There is a requirement for a steam cylinder type of oil for worm gears. There is a lubricant of the mineral cylinder oil type needed for moccasin bushings and, in some cases, for the wet end lubrication system where it is extremely important that water can be easily removed from the oil. This oil has a viscosity of 150 to 200 seconds at 100° F.

In lubricating a machine it is important to see that it is done systematically and that each bearing and gear unit be taken care of at its required period throughout the year. Several systems have been set up in various mills to see that these items are lubricated as required during the year. These systems may consist of a series of Kardex cards or its equivalent. Normally bearings which would require lubrication approximately every two weeks are put in one period. The next period would be every month, every three months, every six months, and last once a year.

By giving the lubrication man a simple set of cards for him to follow he can be assured of not overlooking any particular application as its period occurs during the year. These cards covering each bearing application can include the type of lubricant required as well as any special lubrication instructions applying to the particular part. It gives management a check to make sure that all the bearings have been properly lubricated as required throughout the year. After lubrication is completed for each period, the cards are checked and any unusual condition noted on them by the lubrication man. This can serve as a guide for future maintenance requirements.

There have been a few cases where the main oiling system for the drier bearings and enclosed drives have not been properly maintained and where the proper oil has not been used. This has resulted in failure of a number of antifriction bearings as well as quite a lengthy shut down period in order to correct the difficulty. The lubrication of antifriction drier bearings is one of the most difficult lubrication problems in the industry. The actual lubricating system equipment should be of the best type available since these bearings are operating at high temperatures in the presence of moisture caused by condensation and high humidity in the drier section. To properly maintain the oil so it will lubricate and protect the bearing against corrosion, it is necessary that the oiling system be of the type which will insure adequate removal of any water picked up during the time the oil circulates through the bearing. All oil should be filtered each time it goes to the bearing with a type of filter which will not permit any dirt or sludge to go to the bearing. This can be accomplished by means of a gravity bag filter if the unit is properly installed. Periodic use of a centrifuge to clean up the bottom of the oil tanks will assist in maintaining the oil in the best of condition.

Even with the best of lubricating systems it is not possible to obtain good lubrication of the bearing and protection against corrosion unless the very best grade of oil is used in the system. If the best oil and equipment are not used the bearings will corrode and become full of sludge, carbonized oil, and water, resulting in failure. It is a very expensive procedure in both cost of bearings and lost production time to replace a major portion of the antifriction bearings on a large drier section. Where the best of equipment and best grade of oil have been used, satisfactory operation has been obtained over a number of years without excessive bearing failure.

The maintenance of paper machinery is given a good deal of consideration during its design and manufacturing stages. Where similar care is given in maintaining it properly, reduced time for maintenance can easily result in increased production which is desired by the sales department and management.

TAPPI Notes

Rexford Bradt is now with the Chemistry Department of Barnes and Reinecke, Inc., 120 East Ohio St., Chicago Ill.

Jules J. Becker, formerly of the Equitable Paper Bag Company, is now an exporter with the Harving Paper Company, 135 Broadway, New York, N. Y.

P. Gurchy has succeeded R. T. Steedman as official representative of the Anglo-Newfoundland Development Company Ltd. in the Technical Association of the Pulp and Paper Industry.

Frank M. Hunter, manager of the Fairfield Mill of the Australian Paper Manufacturers, Ltd., Melbourne, Australia, is visiting mills in the United States.

The TAPPI Maine-New Hampshire Section will meet at the Poland Spring House, Poland Spring, Maine on June 13th and 14th. The presentation of technical papers and golf tournament will feature the meeting.

The TAPPI New England Section will meet at the Roger Smith Hotel, Holyoke, Mass. on Thursday April 17th at 6:30 p.m. This will be the annual coating meeting. Philip Dewey of R-B-H Dispersions, Bound Brook, N. J., will talk on "Rheology in Paper Coatings."

The Western New York Chapter of the TAPPI Empire State Section will meet at the Prospect House, Niagara Falls, N. Y. on May 14th at 6:30 p.m. G. H. Tomlinson III, Research Director for the Howard Smith Paper Mills Ltd., Cornwall, Ont., will discuss "Byproduct Recovery from the Chemical Pulping Processes." A. E. H. Fair, President of the Alliance Paper Mills, Ltd. will speak on "Management's View of Lignin Utilization."

John F. Rhoades, formerly of Hardy S. Ferguson & Company, is now consulting engineer for the H. K. Ferguson Company, 11th and Walnut Streets, Cleveland, Ohio.

J. Howard Wright, formerly of the B.F.D. Company, is now supervisor of stock preparation, Sitroux Company, Utica, N. Y.

Daniel R. Weedon, formerly of the Package Materials Laboratories, Inc., is now engineer for Arthur D. Little, Inc., 30 Memorial Drive, Cambridge, Mass.

Kenneth J. MacKenzie is now superintendent of the paper mill Eastman Kodak Company, Rochester, N. Y.

Donald H. Boyce, formerly of the American Newspaper Publishers Association, is now research chemist for Hearst Enterprises, Inc., 959 Eighth Avenue, New York, N. Y.

Effect of Sample Preparation on Analytical Values for Alpha-Cellulose, Copper Number, and Cuprammonium Viscosity*

By B. L. Browning[1]

Abstract

The method of preparation of pulp samples for analysis may have an important effect on the results obtained. A comparative study has been made of various types of preparation for the determination of alpha-cellulose, copper number, and cuprammonium viscosity. Disintegration may alter the analytical values considerably, particularly if the machine is fitted with too fine an exit screen. For alpha-cellulose determinations, the pulp is preferably reduced in size by a very mild treatment, such as tearing apart by hand.

The analysis of pulp samples frequently requires that the material be reduced to a finely divided form, so that a suitable dispersion of the fibers is obtained and the reagents act uniformly on the individual fibers. No generally acceptable mode of preparation has been established. Disintegration in a machine of the Gösta Hall type is frequently specified; this treatment produces a material which is fluffy and well dispersed. Unfortunately, such disintegration may change the analytical values. On the other hand, many investigators have stated that alpha-cellulose and viscosity samples should not be subjected to disintegration of any kind.

The following experiments constitute an investigation of several kinds of sample disintegration, and a comparison of the analytical values obtained for the resulting samples. Each value given in the tables is the mean of at least two closely agreeing results.

The data of Table I were secured on bleached sulphite lap pulp. The conditions under which samples 1 to 9 were prepared are as follows:

1. Gösta Hall defibrator (Allis Chalmers Manufacturing Company, Bullock Works, Norwood, Ohio); a 10-mesh screen of 20-gage wire was used.
2. Abbé defibrator (Abbé Engineering Company, New York); 4-mesh screen with wires 3/32 inch in diameter.
3. Same as 2 but using a 6-mesh screen with wires 1/16 inch in diameter.
4. Same as 2 but using a 12-mesh screen with wires 1/32 inch in diameter.
5. Same as 2 but using a 5/64-inch Monel screen plate with 3/32-inch round holes staggered on 5/32-inch centers.
6. Same as 2 but using a 3/64-inch steel screen plate with 3/32 by 3/4-inch slotted perforations end staggered and axis of slots parallel to movement of the rotor.
7. Wiley mill No. 1 (Arthur H. Thomas Company, Philadelphia). Knives set at 0.009 inch clearance. Holes in screen plate 1/16 inch in diameter on 1/8-inch centers, parallel lengthwise and staggered crosswise.
8. Same as 7; holes in screen plate 1/25 inch in diameter on 1/16-inch centers, parallel both ways.
9. Same as 7; holes in screen plate 1/60 inch in diameter on 1/24-inch centers, parallel lengthwise and staggered crosswise.

The data in Table I show that the analytical results vary according to the process of comminution employed. For the alpha-cellulose test, the mildest method of preparation appears to be separation by hand. Larger aggregates lead to too high alpha-cellulose values. Disintegration lowers the results about 1%. The Abbé or Wiley mills may be used but, in either case, relatively large exit screens should be used to avoid excessive damage to the fibers.

In the determination of copper numbers, the method of preparation should be that which gives a minimum value. For physical reasons relating to penetration of reagents and completeness of washing, the use of large aggregates is undesirable. Cutting mills or disintegrating machines with small exit screens should be avoided. Disintegration by slushing in water would be preferable, except for the additional complications of procedure. Otherwise, a mill of the Abbé type with approximately 4-mesh exit screen seems to give the best result.

The relatively large effect of disintegration on viscosity is well known. The effect is larger, percentagewise, in the case of high-viscosity pulps. Hence, the results shown in Table I can be interpreted only for low-viscosity pulps. For materials of this type and if disintegration is essential or desirable for any reason, it is shown that the highest viscosities are obtained by a machine of the Abbé type. It may be pointed out that most viscosity methods require sample preparation if the pulp is in relatively large aggregates, such as laps or crumbs. Wet disintegration, followed by formation into very thin sheets or into pads which are washed with organic solvents to prevent "horniness" of the pulp, is an alternative procedure.

Additional experiments were made on the copper

TABLE I.—EFFECT OF METHOD OF DISINTEGRATION ON ANALYTICAL VALUES

	Method of Preparation	Alpha-Cellulose, %	Copper Number	Cuprammonium Viscosity, cp.
1.	Gösta Hall—10-mesh screen..	87.1	2.10	...
2.	Abbé—4-mesh screen	87.2	1.92	33.2
3.	Abbé—6-mesh screen	87.4	1.99	33.7
4.	Abbé—12-mesh screen	86.6	2.01	33.3
5.	Abbé—Monel screen plate	87.2	2.24	31.0
6.	Abbé—slotted screen plate...	86.5	2.21	31.7
7.	Wiley—large plate	87.2	2.29	28.8
8.	Wiley—medium plate	86.8	2.04	29.5
9.	Wiley—small plate	85.9	2.22	29.8
10.	Waring blendor—dry	87.6	2.15	31.5
11.	Disintegrated wet	...	1.85	...
12.	Separated by hand	88.0	2.04	...
13.	Cut into ¼-inch squares.....	...	...	31.3
14.	Cut into ¾-inch squares.....	88.5	...	31.7
15.	Cut into ¾-inch squares.....	...	...	31.0
16.	Cut into ½-inch squares.....	88.6	...	...

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 24-27, 1947.

[1] Member TAPPI; Research Associate, The Institute of Paper Chemistry, Appleton, Wis.

TABLE II.—EFFECT OF METHOD OF DISINTEGRATION ON COPPER NUMBER DETERMINATION

Method of Preparation	Copper Number
Cut into ⅛-inch squares	2.60
Cut into ¼-inch squares	3.48
Cut into ¾-inch squares	3.40
Cut into ½-inch squares	3.25
Disintegrated by hand	2.21
Disintegrated in Gösta Hall defibrator	2.30
Cut into ¾-inch squares and disintegrated by stirring in water	2.09
Disintegrated in Gösta Hall defibrator, made into handsheets, and cut into ¼-inch squares	2.16
Disintegrated in Gösta Hall defibrator, made into handsheets, and cut into ¼-inch squares	2.21
Disintegrated in Gösta Hall defibrator, made into handsheets, and pressed at 50 lb./sq. in. for 5 minutes	2.70

number determination, using a new lot of bleached sulphite lap pulp (Table II).

These data essentially confirm those of Table I. The lowest value is obtained by slushing with water; hand disintegration gives slightly higher values. Larger aggregates yield copper numbers which are evidently much too high. Disintegrated pulp, when made into thin handsheets and then cut into squares, gives values which appear satisfactory. The effect of the physical form of the sample is illustrated by the last test in Table II, in which a sheet that had been compressed at 50 p.s.i. was used; the copper number obtained is apparently much too high.

Some additional experiments were made to evaluate the physical factors involved in the alpha-cellulose determination. A third lot of bleached sulphite lap pulp was used. These results are given in Table III.

TABLE III.—ALPHA-CELLULOSE DETERMINATIONS

	Method of Preparation	Alpha-cellulose, %
1.	Lap pulp cut into ½-inch squares	85.8
2.	Disintegrated in Gösta Hall defibrator	84.3
3.	Disintegrated pulp suspended in water, made into pulp sheets of same basis weight as original lap pulp, pressed at 100 lb./sq. in. for 5 minutes, air dried, and cut into ½-inch squares	84.5
4.	Lap pulp separated by hand into thin pieces, which were torn by hand into approximately ½-inch squares	85.3

It may be assumed that hand disintegration separates the pulp in a reasonably effective manner and without degradation. It it then apparent that disintegration lowers the correct alpha-cellulose value by about 1% (4 minus 2 and 1 minus 3). On the other hand, the use of pulp in large aggregates leads to values about 0.2 to 0.5% too high (1 minus 4 and 3 minus 2). These results are in general agreement with those shown in Table I. It may be concluded that the use of pulp in relatively large aggregates is to be preferred over the use of disintegrated pulp, but that the material should preferably be reduced in size by a mild treatment, such as tearing apart by hand.

New Tappi Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

Clarence G. Bennett, Manager, Coating and Laminating Division, Paterson Pacific Parchment Co., San Francisco, Calif. He attended University of Kansas.

Ben T. Briggs, Research Chemist, Rayonier, Inc., Shelton, Washington, a 1938 graduate of the University of Illinois.

Everett W. Clem, Chief Engineer, Rice Barton Corp., Worcester, Massachusetts, a 1925 graduate of Wentworth Institute.

Joseph L. Coburn, Control Chemist, Bird & Son, Inc., East Walpole, Massachusetts. He attended Massachusetts State College.

Warren F. Daniell, Superintendent, Bureau of Tests, Great Northern Paper Co., Millinocket, Maine, a 1922 graduate of Dartmouth College.

Leonard F. Diggens, Technical Superintendent, Griffith & Diggens Ltd., Palace of Industry, Wembley, Middlesex, England.

Percy E. Fuller, Maintenance Superintendent, Mead Corporation, Chillicothe, Ohio.

Raymond W. Henschel, Quality Control and Technical Service Supervisor, Marathon Corporation, Menominee, Michigan, a 1935 graduate of the University of Michigan.

Birger B. Jaatinen, Assistant to Paper Mill Manager, G. A. Serlachius OY, Mantta, Finland, a 1938 graduate of the Technical High School of Finland.

Philip H. Hershey, Chemist, P. H. Glatfelter Co., Spring Grove, Pennsylvania, a 1937 graduate of Gettysburg College.

William A. Kaye, Economic Analyst, The Paraffine Companies, Inc., Emeryville, California, a 1933 graduate of Stanford University and a 1937 graduate of Yale University.

John D. Lohnas, Adhesives Chemist, St. Regis Paper Co., Oswego, New York, a 1941 graduate of the New York State College of Forestry.

John M. Maitland, Field Engineer, The Bristol Co., Waterbury, Connecticut, a 1939 graduate of Michigan College of Mining and Technology.

John F. O'Leary, Chief Mechanical Engineer, P. J. Kennedy & Co., Holyoke, Massachusetts.

George W. Peters, Technical Director, Mead Corporation, Kingsport, Tennessee, a 1925 graduate of Emory and Henry College.

John J. Priest, Chief Chemist, Halifax Paper Co., Roanoke Rapids, North Carolina, a 1926 graduate of the University of New Hampshire.

Alfred T. Hurter, Partner, Stadler-Hurter & Co., Montreal, P. Q., Canada, a 1920 graduate of the Federal Institute of Technology, Zurich, Switzerland.

Hasan A. Hyderi, Engineer, Sirpur Paper Mills Ltd., Hyderabad-Deccan, India, a 1942 graduate of Osmania University.

Arthur R. Ingham, Operating Manager, Louis DeJonge & Co., Staten Island, New York. Attended Northeastern College.

Frank S. Madden, Secretary and Director, The Davey Co., Jersey City, New Jersey.

Alfred A. Mann, Technical Assistant, S. D. Warren Co., Cumberland Mills, Maine, a 1941 graduate of the University of Maine.

Orley B. Mason, Assistant Manager, Escanaba Paper Co., Escanaba, Michigan, a 1933 graduate of McGill University.

Rankin C. McCaskey, Vice-President in charge of sales, Minerva Wax Paper Co., Minerva, Ohio, a 1922 graduate of Western Reserve University.

Joseph A. McCormick, Chemical Engineer, W. C. Hamilton & Sons, Miquon, Pennsylvania, a 1942 graduate of Pennsylvania State College.

Charles H. Sailer, Works Manager, St. Andrew Mills Ltd., Walthamstow, E. 17, England, a 1928 graduate of the Institute of Paper Technology, Koethen, Germany.

Elio J. Sampaix, Papermill Manager, Union des Papeteries, LaHulpe, Belgium, a 1926 graduate of Louvain University.

Frank F. Schrier, Mechanical Engineer, The Moore & White Co., Philadelphia, Pennsylvania, a 1919 graduate of Drexel Institute of Technology.

Paul E. Trout, Student, The Institute of Paper Chemistry, Appleton, Wisconsin, a 1943 graduate of Montana State College.

The Analysis of Production Costs by Statistical Methods

There has recently appeared the second edition (the first appeared in 1944) of an unusual treatment* of the analysis of production costs by statistical methods. First, the author Mr. Lyle is unusual in that he is, in his own words, one of "we industrialists"; the name of Lyle is very familiar to any inhabitant of Great Britain who eats sugar. Secondly, the work confines itself rigorously to a single and unusual part of the theory of statistics—that of determining the dependence of cost on mill records. Thirdly, while the treatment is comprehensive, it is abundantly, although discretely, illustrated by examples; it is supplemented by a glossary and generally supplies every possible aid for the novice.

The type problem attacked is that of relating the total cost of operation to variations in output of a single product. The author asserts that experience in operation is that this relationship is more simple (a straight-line relationship is involved) than is generally assumed in economic theory. The relationship furnishes an estimate of fixed costs which includes, but exceeds, regular overhead. The difference, which the author terms "Factory Fixed Costs," arises principally from certain somewhat elusive operational costs like that of closing and resuming operations at a week-end. The estimation of these costs is one of the most notable achievements of the analysis. It is instructive to compare such costs from one factory to another. The problem of "Factory Fixed Costs" is pursued further by the application of the general methods to particular problems like that of the consumption of steam in a plant. The part of this consumption that is fixed, may be found so that the question, of whether the part is excessive in some factories, may be considered. Apparently, this investigation has proven very profitable by exposing both poor installation and inept operation.

The type problem is extended to the case where two products, one high-grade and one low-grade (or byproduct) are produced and it is required to estimate the cost per unit of each. Further extension to more variables was, presumably, considered beyond the scope of the present work although references are made to literature on the subject.

There is an extensive discussion on the differences between the relationship of cost per unit production with short-term fluctuations and with long-term fluctuations. In the former case fixed charges are unaffected, whereas in the latter case they become modified. The method of estimating the effects involved and in computing their consequences on cost is discussed in detail.

The reader will be reassured from time to time to find parts of problems that are referred to the accountant or the engineer. One gets no impression of excessive enthusiasm for the methods — although there is enthusiasm enough. The methods are conceived as supplementary to those in general use in a system of sugar refineries and have been tried for a number of years.

Most of the volume of the present work is comprised of the details of analysis. Regression, correlation, the variability of estimates and probable (fiducial) limits of estimates are discussed. The work is well set and seems practically free, Figure 14 excepted, from error.

Some workers will follow through the text and, having mastered this one section of statistical theory, will go on to other fields. Others will be satisfied in becoming masters of a valuable technique. To men of both groups the text may become a favorite. The reviewer understands that the edition is somewhat limited.

GEOFFREY BEALL

* Lyle, Philip, 1946. Regression analysis of production costs and factory operations. Oliver and Boyd, London, (2nd revised edit.) pp. xii + 204 (15/6, including postage).

Western New York TAPPI Discusses Photography

The Western New York Group of the Empire State Section of the Technical Association of the Pulp and Paper Industry met on Wednesday, March 12th at the Prospect House, Niagara Falls, N. Y., under the chairmanship of A. H. Nadelman. Dr. John Campbell introduced the speaker, Walter Clark of the Eastman Kodak Company, Rochester, N. Y.

Dr. Clark reviewed some of the important investigation that is being conducted in the laboratory, the plant and in the field, using photography as a means of recording things which the eye cannot see because movement is too fast, or too faint, or associated with invisible radiations.

He covered some of the newer applications of photography in science and industry, namely, high-speed photography, the study of structures and materials by polarized light, photomicrography, the electron miscroscope and X-ray photography. The new and increasing applications of color photography were well illustrated.

Dr. Clark spoke of his interest in the solution of industry problems through photographic analyses and asked that such problems be submitted so that techniques could be worked out.

Those present included: E. E. Andrews, H. P. Bailey, W. E. Beazley, R. J. Benes, F. R. Boyle, D. A. Cameron, J. Campbell, W. Clark, Mrs. W. Clark, R. P. Copeland, R. Eiff, M. Eldridge, R. B. Embury, E. H. Fair, N. Foster, A. C. Hayes, F. P. Heil, C. Hendsbee, P. N. Holliwell, P. T. Kuhnel, Helen L. Miller, J. Morrison, C. L. Myers, A. H. Nadelman, G. E. Norton, R. N. Prince, G. H. Rand, Jr., P. R. Rolleston, R. D. Rusch, S. M. Scaletta, W. F. Schroeder, W. Shrubsall, A. Sledd, B. J. Staneslow, W. O. Stauffer, G. K. Storin, R. G. Vaeth. C. Webber, J. W. Youngchild.

Chemical and Technical Dictionary

The Chemical Publishing Company has recently issued a "Concise Chemical and Technical Dictionary" edited by H. Bennett, Technical Director of Glyco Products Co., Inc., New York, N. Y. (1055 pp. 6 x 9). This volume contains 50,000 definitions of terms used in chemistry, plastics, physics, numerology, electricity, engineering, etc. It is written for professionals and laymen and has sufficient cross-references to facilitate the effort of the user in finding exactly what he may be seeking.

A special feature of the book is an up-to-date compilation of many trade-name proprietary products. For chemical compounds the name, synonymous name, semi-structural formula, molecular weight, color, form and other physical properties, sp. gr., m.p., b.p. solubilities and uses are given.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd Street, New York 17, N. Y. at $10.00 per copy.

Method for Evaluating and Reporting Product Quality*

By J. B. Catlin[1] and J. G. Strieby[1]

Abstract

There is need for a method for reporting quality that is comparable in utility to the better types of cost reports. Some basic concepts involved in a rational approach to measures of total quality are set forth. A quality index which can be made to satisfy the needs and conform to the basic concepts is described and illustrated. A wide variety of uses for the index in manufacturing, sales and purchasing is indicated. Mention is made of specific difficulties in application of the index.

The quality of paper products is notoriously complex. Paper's inherent value as related to true customer needs is generally measured indirectly by a large number of tests and inspections on samples. Condensations of these numerous quality data are seldom made. However, management must have answers to questions like: How does quality of current output compare with that of a year ago? Has the trend in quality been up or down? Has quality been satisfactorily controlled?

Answers to these questions are presently supplied to most management groups in the industry as a judgment of individuals on the basis of general knowledge, familiarity with manufacturing performance and customer requirements. Such judgments naturally conflict and tend to be inaccurate or biased. This management problem can be minimized by a statistical procedure for weighing and evaluating the mass of quality data produced by control or inspection systems during the course of paper manufacture which balances the favorable and unfavorable features to give an over-all picture of current product quality.

Numerous methods have been devised for solving this problem. The one to be described was developed by the Bell Telephone Laboratories and has been used successfully by the Western Electric Company for many years. Its application to the paper industry presents some problems. The purpose of this paper will be to discuss the basic concepts behind the method, explain the method itself, discuss some of its practical difficulties and point out various applications in the industry.

Basic Principles

The basic concepts of a rational approach to measures of total quality require the use of the same statistical devices employed in cost theory by cost accountants; namely, transformed distribution and index theory. Cost accountants devised or inherited a measure of cost or price, the dollar. In their work they transform all other measurements to this unit, e.g., tons of pulp, hours of labor, percent delay, percent shrinkage, etc. With these many heterogeneous items transformed to a common dollar scale, accountants then manipulate the dollars to get at total cost, profit and loss, cost per unit, etc. Simple index theory is sometimes used to measure cost this year compared with last, e.g.,

$$\text{Cost Index Number} = \frac{\text{Current Cost of Manufacture}}{\text{1940 Cost of Manufacture}} \times 100$$

These concepts and procedures are rather easily applied to measures of value. A product's usefulness, utility, or value may or may not be related to its cost or price. (In this connection, progress toward "more for the money" is better measured by cost per unit of value rather than cost per unit of weight or area.) The method to be described creates a unit of value, or a quality-dollar, transforms many heterogeneous quality measurements into this quality-dollar scale, relates current quality to past quality in the form of an index, and allows for unavoidable sampling fluctuation.

It should be pointed out that the method of quality evaluation to be presented does not measure the difference between design and competitive quality or between design and ideal, or perfect quality as required by the needs of the customer. Also, the proposed index does not necessarily measure the importance, from a customer's viewpoint, of variations from design or specification quality. With the specification situation presently faced by the industry in as unrealistic condition as it is, tabulation of variation from these design specifications has been found to give misleading pictures in many cases. (See Fig. I.) The proposed index will measure with considerable accuracy variations from base period quality, meaning past average quality, where almost always the base period quality is poorer than the design goal or current specification.

Method of Establishing Normal Quality

The methods described below are taken from H. F. Dodge *(1)*, with some refinements secured by direct contact with Western Electric Company.

Before the details of the index can be worked out it is necessary to decide what quality characteristics are to be included and what constitutes a unit of production. Since the index is most useful when it can deal with total quality, all quality characteristics which bear on customer experience should be included and those which have no relation to customer experience should be excluded *(2)*. The unit of production must be chosen to conform to the quality characteristics so that it may be classified objectively and completely in accord with considerations outlined below. A number of such units constitutes the sample and must be taken for examination with due regard for the theories of sampling.

It is then necessary to define the quality characteristics as attributes, whether they are determined by qualitative examination or by quantitative measurement. That is, there must be objective means for deciding when a unit of production which is included in the sample is defective with respect to one or more

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 24 to 27, 1947.

[1] Technical Department, Kimberly-Clark Corp., Neenah, Wis.

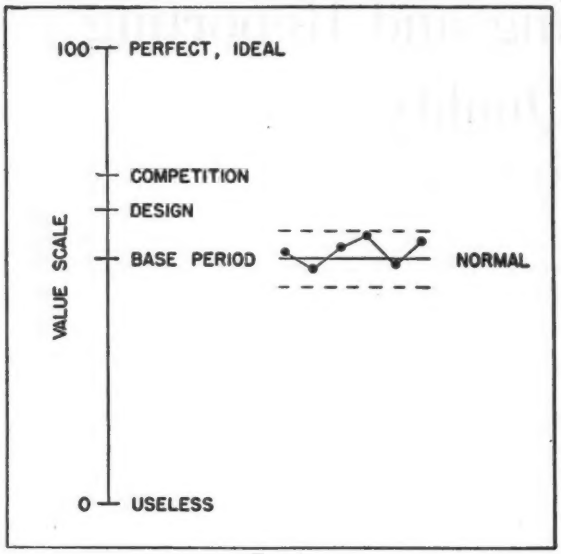

FIG. 1

characteristics. For example, if a sheet of paper is a unit of production, the presence of one or more slime holes larger than some specified size can constitute a defect; an observed basis weight less than some specified value can constitute a defect; or one or more wrinkles of specified type can constitute a defect.

Having defined the defects, they must then be transformed to a customer experience scale by assignment of demerit weightings or seriousness categories. There are many possible ways in which that can be done but experience indicates that four classifications as to seriousness are adequate and may be described as follows:

Class A Defects—Very Serious — 100 demerits
The defect makes it impossible to use the product, is certain to cause failure of serious nature, or is liable to cause personal injury or property damage.

Class B Defects—Serious — 50 demerits
The defect will possibly but not surely cause Class A failure, will surely cause failure of a nature less serious, e.g., that can be overcome by adjustment.

Class C Defects—Moderately Serious — 10 demerits
The defect is not likely to cause failure but is likely to cause trouble of less serious nature. Major defects of appearance or workmanship.

Class D Defects—Not Serious — 2 demerits
Incidental type of defects that will not cause failure or trouble. Minor defects of appearance and workmanship.

Whatever classification of defects and demerit weightings are selected, it is then possible to evaluate product quality in terms of demerits per unit. To attain maximum utility there must be established an expected or normal value of demerits per unit and means for deciding when observed values of demerits per unit differ from the expected value by amounts greater than those due to sampling fluctuation. The former is done by examining sample units over a long period of stable production known as the base period. The latter is accomplished by the procedure common to simple statistical tests of hypotheses.

To illustrate: Assume that during a base period of three years a sample of $N_1 = 11{,}348$ units of product has been examined and found to include 146 class A defects, 1628 class B defects, 4652 class C defects, and 6114 class D defects as indicated in Table I. Then the expected or normal quality level is

$$\text{E.Q.L.} = \frac{\Sigma Wd}{N_1} = \frac{154{,}748}{11{,}348} = 13.64 \text{ demerits per unit. (DPU)}$$

If, during a month or other period over which product quality is to be compared with base period or expected quality, $N_2 = 315$ units of product are examined then the standard deviation of demerits per unit is

$$\delta_{DPU} = \sqrt{\frac{\Sigma W^2 d}{N_1 N_2}} = \sqrt{\frac{6019656}{11348\ (315)}} =$$

$$\sqrt{1.684} = 1.298 \text{ demerits per unit}$$

and, if no variation other than chance sampling fluctuation be present, the observed demerits per unit can be expected to fall, in the great majority of cases, within the range $EQL \pm 2\delta_{DPU}$ or $13.64 \pm 2(1.298)$ or from 11.04 to 16.24 demerits per unit.

Such data may be plotted readily in conventional Shewhart control chart form, where the horizontal scale is time, the vertical scale is demerits per unit, the solid line is expected or normal base period quality (EQL) and the dotted limits are $EQL \pm 2\delta_{DPU}$. Such charts are very useful and are interpreted in conventional manner *(3)*.

It should be noted, however, that the limits of such

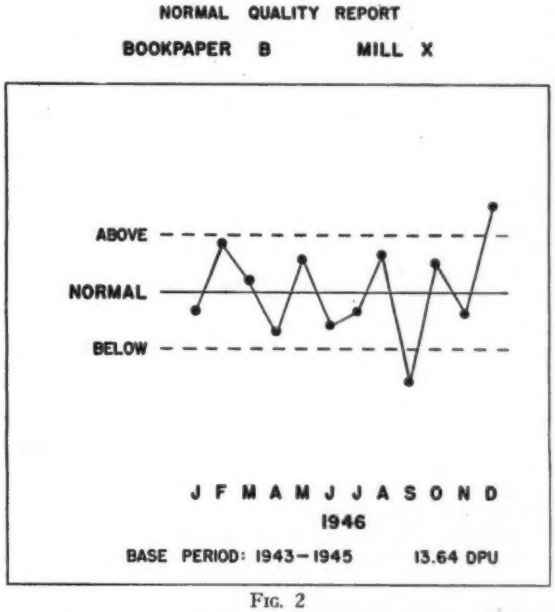

FIG. 2

demerits per unit charts vary in width as the sample size (N_2) varies. Since varying limit widths may be confusing to those not accustomed to using control charts, it may be preferable to use a further transformation to keep the limits at constant width. Such a device consists of using the horizontal time scale as before but a vertical scale in standard deviation or t units where the solid line or normal expected quality is at $t=0$ and the limits are at $+2t$ and $-2t$. For a monthly value

$$t = \frac{\text{expected DPU} - \text{observed DPU}}{\delta_{DPU}}$$

For example, in the period mentioned above where $N_2=315$ units were examined, if defects which aggregated 14.50 DPU were observed

$$t = \frac{13.64 - 14.50}{1.298} = \frac{-0.86}{1.298} = -0.66$$

and the quality of the sample for that period is be-

TABLE I

Defect Class	Demerit Weighting (W)	Number of Defects (d)	Wd	W^2d
A	100	146	14,600	1,460,000
B	50	1628	81,400	4,070,000
C	10	4652	46,520	465,200
D	2	6114	12,228	24,456
			154,748	6,019,656

low or poorer than base period or expected quality, but by an amount so frequently caused by sampling fluctuation alone that there is no basis provided by the numbers themselves for concluding that quality of the production for that period is other than normal.

For further illustration, consider the same product which gave an expected quality level of 13.64 DPU over the 3-year base period. Table II shows values for the following 12 months and the method of arriving at the monthly t values. Figure 2 shows these values plotted in Normal Quality Report form.

Difficulties with Application

Numerous pitfalls exist in the use of the type of quality statistics described above. Where a wide variety of products are made in several mills, the difficulty of maintaining a quality-dollar common to all mills and products is great. It is essential that class weightings and definitions be constant and consistent in order that the interpretation of the Normal Quality Report by top management can be common to all products in the sense that the interpretation of the profit and loss statement can be common to all products and the dollar is still a dollar whether it refers to book paper, newsprint or wallpaper. Considerable staff coordinative effort is thus required and a careful interpretation of the basic class definitions by products must be made before weightings are made for a new class of end uses and products.

It will also be appreciated that if two different groups within an organization attempt to prepare a Normal Quality Report, considerable conflict between the two must inevitably result. The complexity of dimension of the Normal Quality statistic is such that only one report can be prepared within an organization without getting into many of the difficulties that government bureaus now face with conflict of statistical indices reputedly designed to measure the same quantity.

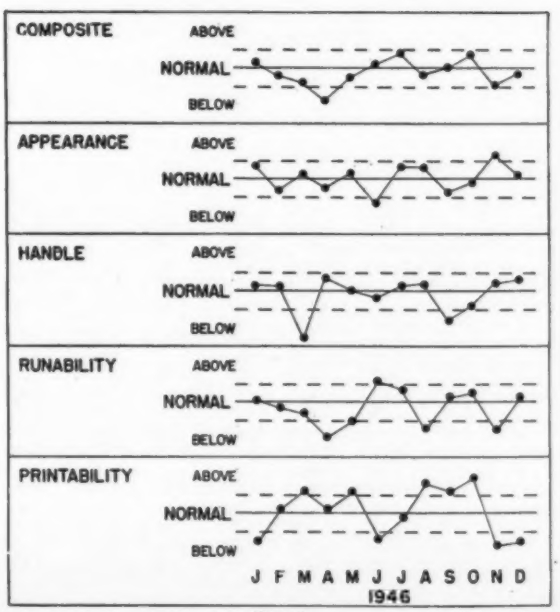

FIG. 3

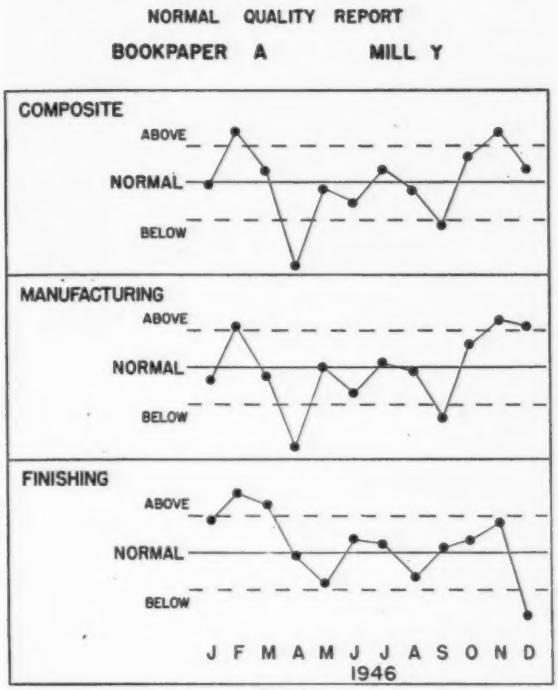

FIG. 4

When a quality weighting or survey committee attempts to define and weight defects, it is essential that manufacturing and sales representatives be present and that the judgment of the sales representative be given maximum weighting in the decisions made. It is also important that the group directly responsible for the preparation of the Normal Quality Report (in many cases the Technical Department) condenses all pertinent information and makes recommendations regarding defect weightings to the committee to facilitate rapid decisions. Such a group, particularly when inexperienced, tends to overweight the importance of various defects. Thus, a particular defect might be weighted as "A" when it was really "C," or "B" when it was really "D." If the development and use of Normal Quality is approached experimentally for a year or two and no strong claims are made for its reliability during this period, experience will point out the improper weightings and regular review (at least yearly) will permit the necessary changes to be made.

The experience gained with survy committees emphasizes the inefficiency of normal technical control and inspection systems in their evaluation of product quality from a customer viewpoint. A surprising amount of so-called quality data are obtained either for cost or inter-process control. An experienced survey committee uncovers expensive duplications, test and inspection procedures lacking customer significance, and leads the way in the development of new significant tests.

It can be argued that a survey committee making a complex judgment by a prescribed procedure is

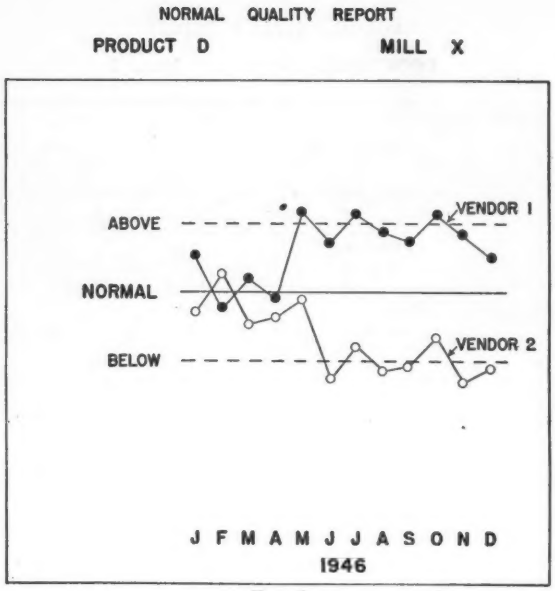

FIG. 5

worse than none because of the seriousness of error. Actual experience, however, is to the contrary. Definition and weighting errors are soon apparent and easily corrected. The advantages of one judgment made by the most qualified group extended uniformly to all products and mills gives the entire Manufacturing and Sales organizations a firmer and more accurate framework within which to make their quality decisions.

The Normal Quality Report has been found very useful in all management echelons but more particularly for top management. At lower levels, e.g., department heads, in both manufacturing and sales some variations of the Normal Quality Report have been found worthwhile. It is easily recognized that Normal Quality is a composite report comprising many components. These components may be assembled many different ways (as in cost work) to clarify portions of the total quality problem. Thus, in quality reports to operating sales staffs the Normal Quality can be broken into homogeneous customer categories as in Fig. 3.

For a mill management group the same Normal Quality Report can be subdivided into the responsibilities of operating departments as in Fig. 4.

A tabulation of individual defects (with sampling fluctuation provided for) is sometimes helpful. (See Table III.)

TABLE II

Month 1946	A Sample Size N_2	B Total Demerits Observed	C Observed Demerits per Unit B/A	D Expected Demerits per Unit (base period)	E Expected Minus Observed D — C	F $\frac{\sqrt{\Sigma W^2 d}}{N_1 N_2}$ 23.03 / $\sqrt{N_2}$	t E/F
Jan.	315	4568	14.50	13.64	—0.86	1.298	—0.66
Feb.	353	4060	11.35	13.64	+2.29	1.226	+1.87
Mar.	287	3742	13.04	13.64	+0.60	1.356	+0.44
April	315	4888	15.52	13.64	—1.88	1.298	—1.45
May	298	3578	12.01	13.64	+1.63	1.334	+1.22
June	406	6114	15.06	13.64	—1.42	1.143	—1.24
July	378	5466	14.46	13.64	—0.82	1.185	—0.69
Aug.	309	3652	11.82	13.64	+1.82	1.310	+1.39
Sept.	271	4940	18.23	13.64	—4.59	1.399	—3.28
Oct.	303	3698	12.20	13.64	+1.44	1.323	+1.09
Nov.	304	4452	14.64	13.64	—1.00	1.320	—0.76
Dec.	295	2764	9.37	13.64	+4.27	1.340	+3.19

Application Within the Industry

Many applications of Normal Quality are obvious. In addition to providing a quick, yet comprehensive, report to top management it can also be used at other management levels as already described. All products made in one mill can be pooled and the total quality performance within or between mills compared even though the products are dissimilar. The quality performance between crews or machines making the same or different products can be similarly compared. Where large quantities of purchased materials are subjected to sampling inspection, vendor quality performance can be evaluated and vendors compared with each other. (See Fig. 5.) Normal Quality can be reported yearly, monthly, weekly, and daily to good advantage depending on the management group involved and the kind of quality decisions made. Where several manufacturing groups are producing supposedly identical products, the report can be used not only to measure variation from base period but also differences between design level and base period. In modified form this method has been used to compare design, competitive and ideal quality and has also proved useful for evaluating and reporting the housekeeping, safety, and sanitation performance of mill groups.

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2. Shewhart, W. A., *Mech. Eng.*, Dec., 1934, pp. 725-730.
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BOOKPAPER A — TABLE III.—PER CENT DEFECTIVE TABLE MILL X — YEAR 1946

Quality Characteristic	Demerit Class	Expected % Defective	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Sample Size			256	324	400	289	225	441	361	256	289	441	400	361
Dirt	C	1.25	0.78	2.16	1.75	0.69	3.11**	1.82	1.94	0.78	0.69	1.36	1.75	1.11
Dirt	D	6.14	6.25	5.56	4.25	8.30	12.90**	3.40	8.31	8.20	4.50	2.04*	5.00	4.98
Holes	A	0.18	0.00	0.62	0.00	0.35	0.00	0.00	0.55	0.39	0.00	0.00	0.50	0.28
Holes	B	1.36	1.56	2.47	1.25	0.69	0.45	0.00*	1.38	1.56	2.08	1.36	3.75**	1.11
Holes	C	4.02	3.52	3.09	4.50	5.88	4.44	1.82*	3.88	3.12	6.24	4.08	6.75**	4.43
Wrinkles	B	1.69	1.56	2.16	3.50**	1.73	0.45	1.82	2.77	1.17	2.08	1.13	0.75	2.22
Wrinkles	C	5.93	6.64	4.95	10.00**	4.50	3.99	6.80	5.26	7.81	7.96	4.08	4.50	7.20
Tears	C	2.08	0.78	1.85	2.75	3.12	2.22	1.36	1.66	3.12	0.93	2.04	3.00	1.38
Tears	D	4.89	3.12	6.81	5.50	6.92	4.00	3.63	3.04	6.25	5.54	3.85	4.25	3.04
Brightness	B	0.92	0.00	0.92	1.75	1.73	0.89	1.82	3.04**	3.90**	4.15**	1.36	0.25	0.83
Brightness	C	2.45	2.74	3.09	2.00	3.80	3.11	2.26	6.10**	7.81**	8.30**	3.17	1.25	1.38
Basis Weight	C	0.61	1.17	0.00	0.50	1.37	0.45	0.45	1.11	1.56	1.39	0.23	0.50	1.11
Basis Weight	D	3.09	2.73	4.63	3.75	4.16	1.33	2.27	1.94	4.30	2.77	3.17	2.00	4.16
Opacity	B	1.45	2.34	1.54	1.25	0.69	2.66	2.27	0.55	0.39	0.35	2.04	2.25	0.83
Opacity	C	4.31	5.86	5.25	3.25	2.76	4.00	5.90	1.11*	1.12*	1.38*	4.54	5.75	4.71
Fold	C	2.69	0.43*	0.31*	3.25	4.15	1.77	2.04	3.88	2.74	3.12	2.04	1.75	6.64**
Fold	D	8.71	4.30*	4.64*	10.25	11.40	8.90	7.02	6.93	8.20	10.39	7.94	8.75	14.10**

* Quality better than base period.
** Quality poorer than base period

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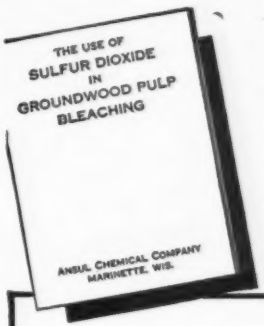

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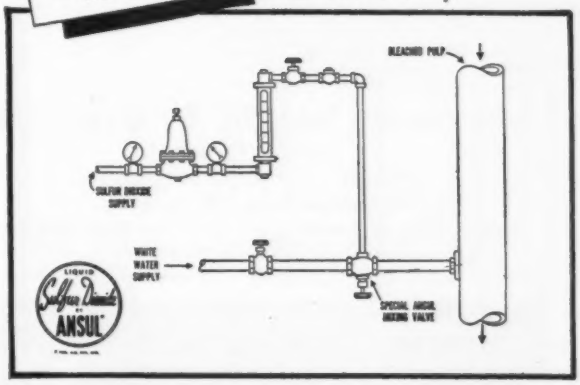

Here are the advantages of using Ansul Liquid Sulfur Dioxide:

1. Combines acidifying, reducing and anti-oxidizing steps in one.
2. Eliminates the cumbersome handling of acid and salt or solutions of varying concentration.
3. Simple and positive finger-tip control which is practically automatic.
4. Immediate starting and stopping of operation with elimination of waste.
5. Reduces operating and maintenance costs.
6. Equipment is inexpensive, permanent and easy to install.
7. Guarantees absolute purity and freedom from contamination.

ANSUL CHEMICAL COMPANY
INDUSTRIAL CHEMICALS DIVISION, MARINETTE, WIS.
Eastern Office: 60 E. 42nd St., New York City

H. M. SPAIN & CO.
COMMERCIAL FORESTERS
ESTABLISHED 1910
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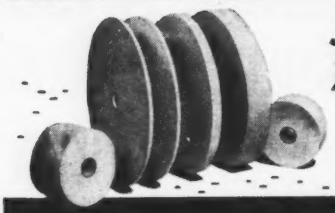

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Make clean, square-edged rolls that meet the specifications of the most exacting customer

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An enzyme product for preparing superior coatings and tub-sizings from starch.

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Embossing calendering . . .

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No matter what type of calendering you do, or what type of finish you need, there is a Butterworth Calender Roll to meet your specifications. Made of only the finest materials, which we process ourselves, the roll is locked on the forged steel shaft by a special process. Tremendous pressure makes certain the roll cannot slip or become loose. The forged steel head is held in place by taper wedges.

Each Butterworth Calender Roll you buy, new or refilled, is subjected to as many as 120 test readings before you receive it. Tests to determine density . . . tests to determine hardness . . . tests to determine smoothness. These tests assure you of many extra hours of outstanding performance.

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COTTON RAGS

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require no special equipment?

Rohm & Haas *HYDROSULFITES!*

Rohm & Haas zinc and sodium hydrosulfites have proved their economy as bleaching agents for pulps. They offer fast bleaching at moderate temperatures, together with maximum ease of application. Also useful in leveling color differences from batch to batch of pulp.

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FELT MILL SUPERINTENDENT

This position is available to a man looking for a future—who is qualified to operate a single 80″ felt machine with 84 dryers.

Plant is located at Stockport, N. Y. It is well equipped and production is steady. Improvements are constantly being made to increase production.

We make both flooring and roofing felts. The entire production is consumed in our own roofing and linoleum plants. We have three such plants.

The man we are looking for must be thoroughly experienced in all phases of felt making. Consideration will be given to a real capable tour boss who lacks an opportunity to advance with his present company.

The company owns an attractive house for superintendent to live in.

Write giving a complete history of yourself to:

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BONAFIDE MILLS, INC.
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A-10

WANTED PLANT ENGINEER

Engineer. Mechanical preferred with pulp and paper mill experience to assume position of plant engineer with bleached pulp mill located in Florida. Responsible position affording excellent opportunities for right man. Give details training, experience, salary expected. All answers confidential.

Address Box 47-291 care Paper Trade Journal. M-15

ANILINE PRESSMAN

Experienced Cellophane Printer. Top pay. Southern California Plant. Write full qualifications, Box #47-297 care Paper Trade Journal. A-10

PACKAGING ENGINEER — Opportunity in well established company for man who wants to make packaging his career. Should have some technical knowledge of corrugated carton manufacture and general knowledge of glass, metal and wood containers. Please tell us about your education, experience, salary requirements. Address Box 47-295 care Paper Trade Journal. A-10

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EXPERIENCED PULP & PAPER MAKERS FOR MEXICO

Location—Atenquique, on main railway between Guadalajara and Manzanillo. Climate very good, 3500 ft. elevation, not tropical. Town newly built having English-Spanish school and company stores.
Salaries as follows on monthly basis 48 hours weekly, overtime for time over 48 hours weekly:
Pulp mill all shifts $350.00.
Equipment brown stock washers, centrifugal & flat screens, decker, caustic room, recovery furnace boiler and evaporators. Paper machine Black Clawson with electric drive. Jordans Miami by Shartle Bros. Well ventilated and cool machine room.
Salaries for paper makers all shifts as follows:
Machine tenders $375.00
Back tenders $325.00
Jordan operators $325.00
Furnished apartments available at reasonable rates for married men. Lodgings and laundry available at reasonable rates for single men. Meals charged for at fifty cents each. Incoming traveling expenses paid by company. Return expenses paid only after 4 months minimum service or if company decides to release employee sooner.
AL80 WANTED one paper mill chemist with much practical experience on feed water treating, salary about $6,000.00.

Address replies to:
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ATTENTION: MR. S. SOLVASON A-10

HELP WANTED

CHARLES P. RAYMOND SERVICE, Inc.
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Specializing in Paper Mill Personnel
Positions Now Open

- Assistant to chief engineer (Mid-West) millwrighting, machine shop and maintenance work
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- Sulphate and soda pulp manufacturer with chemical or mechanical engineering education
- Boss machine tender, back tender, machine tender, third hands, beater engineer
- Cylinder machine tender, back tender, winder man for Pacific Coast
- Laboratory supervisor and superintendent combined, fine writing and printing paper
- Board Mill Superintendent
- Pulp mill engineer and draftsman
- Mechanical engineer and junior mechanical engineer

We invite correspondence (strictly confidential) with paper and pulp mill executives seeking new positions and with employers seeking new personnel. A-10

SALES ENGINEER

Opportunity for ambitious man who wants to get placed with young progressive concern. Acquaintance in the Paper Industry desirable. Some experience and personality, a requisite. Headquarters in Eastern Penna.

Address Box 47-296 care Paper Trade Journal. A-24

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$2,500-$25,000. This thoroughly organized confidential service of 37 years' recognized standing and reputation carries on preliminary negotiations for supervisory, technical and executive positions of the calibre indicated. Retaining fee protected by refund provision. Identity covered and present position protected. Send only name and address for details.

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WANTED MECHANICAL ENGINEER

Skilled and experienced in industrial power plant design and steam and power studies. Good position for right man. Give training, experience, and salary expected. Location Michigan. Reply to Box 47-238 care Paper Trade Journal. TF

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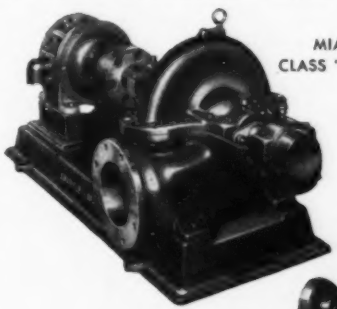
With Mill Following
For Paper Stock
With
Leading Waste Paper Packer
Good Salary
Attractive Proposition
Box No. 47-268 care Paper Trade Journal TF

ENGINEERING DRAFTSMAN experienced in pulp and paper mill layout and design. Location Florida. Give complete details, age, experience, availability and salary expected. Address Replies to Box 47-253 care Paper Trade Journal. A-10

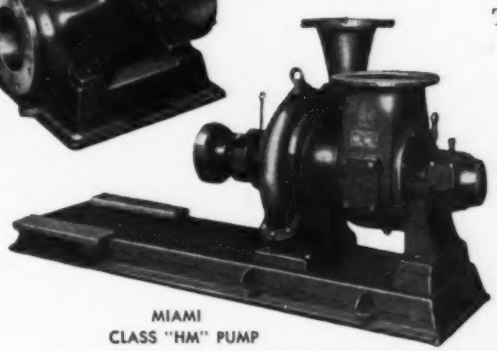
YOU CAN'T GUESS-BUILD PUMPS FOR PAPER MILLS

There is no such thing as "guess-building" a pump to handle paper stock. You have to study the action of the stock at various densities, at each and every step in the preparatory process. You've got to go into the mills to do it—exactly what Shartle engineers have long been doing. That's why Miami pumps carry the design they do, why they do such effective work, why they are so widely used.

MIAMI CLASS "LV" PUMP to agitate stock in the chests. Also specially adapted to pumping low consistencies.



MIAMI
CLASS "A" PUMP



MIAMI
CLASS "HM" PUMP

The Miami pump line is a big line and long study of mill conditions influenced every design on it.

MIAMI CLASS "A" to replace old fan pumps. Built special to pump water or thin stock. Double suction. 16 sizes. Capacities 100 to 10,000 g.p.m. With a Miami Class "A" a higher test sheet on lower consistency at the vats becomes practical.

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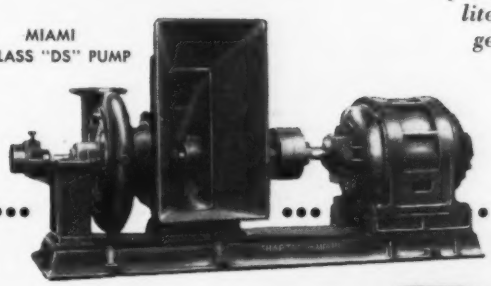
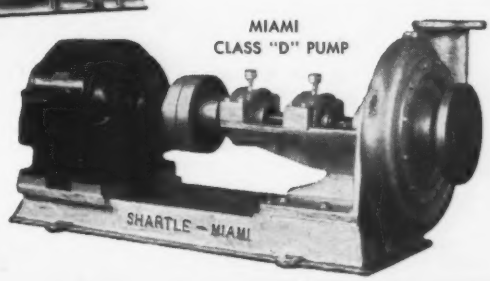
These and several other specialized pumps fully described in available literature. Just state the need and get the Shartle recommendation.

MIAMI
CLASS "DS" PUMP



Dilts



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CLASS "D" PUMP

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MIDDLETOWN, OHIO

DILTS MACHINE WORKS, FULTON, NEW YORK

Divisions of

THE BLACK-CLAWSON CO., Hamilton, Ohio

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WANTED—Superintendent for converting room. Experienced in volume production of toilet paper, paper towels and paper napkins. State full resume and salary desired in first letter. Address Box 47-233 care Paper Trade Journal. A-17

EXPERIENCED MILLWRIGHT AND MACHINIST—for a paper finishing mill in New England. The right man to be advanced to foreman within a year. Attractive pay, with paid vacation and low cost hospitalization, life and accident insurance. Address Box 47-212 care Paper Trade Journal. TF

SALES ENGINEER—Experience in Paper Making Machines and Allied Equipment necessary. Excellent opportunity for permanent position with paper machine manufacturer located in the East. State age, experience and when available. Address Box 47-144 care Paper Trade Journal. TF

POSITION OPEN for general superintendent of two machine mill in Middle West. Must have machine experience, also executive ability. State age, experience, also give references with application. Address Box 47-266 care Paper Trade Journal. M-1

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WANTED—Machine Tenders for single tissue machine. Mill located South Central New York State. 48 hour week with high pay for experienced cylinder tissue operators. Address Box 47-292 care Paper Trade Journal. M-1

WANTED—Man with technical training and with experience in paper manufacture for technical service work in connection with line of chemicals used in paper manufacture. Excellent opportunity. Address Box 47-286 care Paper Trade Journal. A-24

SITUATIONS WANTED

WEST COAST ONLY

Protective, Functional, Industrial, Decorative, Building-Papers. Director of Research, College Graduate with broad and diversified background 20 years experience, creative type with initiative desires resposible position in the $10,000 range. Address Box 47-294 care Paper Trade Journal. A-24

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RESEARCH CHEMIST

Ph.D., with sound background in cellulose, pulp and paper, desires responsible position in Technical Service or Market Development. Six years diversified experience in supervision, process development, technical control, cooking, bleaching and processing wood and vegetable fibers. Employed but seeking opportunity of advancing to executive position with chemical company serving the paper, textile and plastics industries. Southern or Eastern location preferred but not essential. Address Box 47-228 care Paper Trade Journal. A-24

Mechanical Engineer, 27 years old, six years experience in Plant Engineering, experienced in plant layout, various mill equipment design, piping design, structural design power house design, application of instrumentation. Directed installation of equipment and supervision of men. Capable, hard working, and practical executive. Now employed as assistant plant engineer and desire change. Address Box 47-284 care of Paper Trade Journal. A-10

FOR SALE

1—100" Drilled Face Suction Couch Roll (18" diameter).

BEATERS
1—2000 lb. Holyoke-Iron Tub Beater.
2—1200 lb. E. D. Jones (no tubs).
1—1000 lb. Dayton Beater (no tub).
1—500 lb. Beater—iron tub.

BLOWERS
2—Buffalo Forge Company—Size 7—Duplex Conoidal steel plate Blowers. Ball bearing.

CALENDER STACKS
1—5 roll—72" face.
1—7-roll 36" Holyoke Machine (supercalender).

CENTRAP
1—Shartle Brothers Centrap.

CHIPPER
1—50" Murray Chipper (8 knives).

CREPING MACHINE
1—86" Waldron Creping Machine, practically new.

CYLINDER MOULDS
1—30" diameter x 74" face.
2—30" diameter x 54" face.
1—30" diameter x 75" face.
2—36" diameter x 84" face.
1—36" diameter x 80" face.
3—30" diameter x 72" face.

DOCTORS
14—Dillon Doctors — complete with accessories—98" face.

DRIVES
1—#1 Reeves Drives — totally enclosed. (New)
2—Foote—7½ h.p. Speed Reducer (Ratio 240 to 1).
1—40 h.p. Bagley & Sewall, enclosed drive.
2—30 h.p. Downingtown, enclosed drives, ratio 6 to 1.
1—Cleveland Worm Drive, Ratio 10 to 1. New.
2—Smith & Winchester mortise gear. Drives.
1—D. O. James 75 H.P. Speed Reducer with couplings and motor base. Ratio 2.16 to 1. 900 RPM.
1—#5 Reeves Drive.
4—Horton vari-speed Pulleys.

DRIVES (Angle)
1—Cleveland—15:1—6 h.p.—1200 r.p.m.
1—Philadelphia 50:1—1 h.p.—1200 r.p.m.
2—Philadelphia 21½:1—3 h.p.—1200 r.p.m.
1—General Machine 16:1.
1—Link Belt 25:1—r.p.m. input 1150—r.p.m. output 46, including 7½ h.p. G.E. totally enclosed motor.

V-BELT DRIVE
1—21½" diameter x 7½" face, 5 groove.
1—16½" diameter x 7½" face, 5 groove. (With clutch).

DRYERS
1—28" diameter x 76" face.
1—48" diameter x 94" face.
2—25" x 120" (Baby Dryers).
1—48" x 100".
1—36" diameter x 38" face.
1—24 x 74 (Stainless steel).
3—24 x 72 (Copper face, textile type).

ERKENSATORS
2—I. W. E. Erkensators—bronze construction—complete with motors, starters and distributing box.

FLAT SCREENS
2—12 plate Flat Screens.
1—4 plate Flat Screen.
1—6 plate Flat Screen.

HYDRAFINER
1—Dilts Hydrafiner (1200 r.p.m.)

JORDANS
2—Noble & Wood, Pony Monarch, Belt Driven.
1—No. 9 Emerson Jordan—for direct connection to a motor.
1—Noble & Wood Monarch.

KNIFE GRINDER
1—96" Rogers Knife Grinder.

LIGHTER BAR LIFTS
3 sets Hydraulic Lighter Bar Lifts, with pump.

PULLEYS
Various cone and assorted pulleys.

PULP EQUIPMENT
1—32" three pocket Glens Falls Grinder (for 27" wood).

PULP SCREEN
1—IMPCO centrifugal pulp screen design No. 3.

PULPERS
1—Lannoye Pulper.
1—Jones Pulper.

PULVERIZER
1—Erie coal pulverizer.

PUMPS
1—Buffalo Pump—5500 g.p.m. (50' head).
4—Vertical Schutte & Koerting Acid Pumps (with motors).
2—Goulds—2 stage—420 g.p.m.—1010' head.
1—Gardner Denver 4 x 6—including 15 h.p. totally enclosed motors—700 g.p.m.—72' head (new equipment).
2—Weil Pump Co.—100 g.p.m.—100 P.S.I. including 15 h.p. motors (new equipment).
1—Bell & Gossett—600 g.p.m.—100' head—including 25 h.p. motor.
1—Bell & Gossett—300 g.p.m.—120' head—including 15 h.p. motor.
1—Goulds Sump Pump—50 g.p.m.—20' head—including motor.
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

REELS
1—72" Downingtown Expansion Reel.
1—2 Bowl Reel—110" face.

ROLLS
500—Brass tube-steel tube—rubber covered iron rolls—various sizes.

SCREEN PLATES
20 Plates cut .016.
10 Plates cut .008.
Also other sizes and cuts in stock.

SHEETERS
1—50" Hamblet Sheeter.
1—48" Langston heavy duty chopper (this is a combination machine, combining a slitter, scorer, sheeter and chopper.)

SHREDDERS
1—No. 25 CRSE Mitts & Merrill Hog.
1—Gilman Shredder.
1—Waterville Shredder.

SLITTERS AND WINDERS
1—30" Langston.
1—36" Beck Razor Blade type Slitter & Winder.
1—60" Moore & White Slitter and Winder set for 5/8" slits.
1—60" Moore & White Slitter and Winder set for 7/16" slits.

STACKERS
1—Economy Engineering 2000# capacity—with motor.
1—Economy Engineering 1000# capacity—hand operated.

STOCK PUMPS
2— 8 x 18 Shartle Brothers Triplex.
1—10 x 20 Shartle Brothers Duplex.
1—10 x 12 open impeller. (All lead).
1—10 x 20 Shartle Brothers Triplex.
1—8 x 10 Moore & White Triplex.
Numerous other Centrifugal Stock Pumps. Advise as to your requirements.

SUCTION FELT ROLL
1—Nash 110" Suction Felt Roll.

VACUUM PUMPS
1—L4 Nash Vacuum Pump.
2—L3 Nash Vacuum Pumps.
1—No. 7 Sturtevant Vacuum Pump.
1—14 x 20 Connersville.
1—18 x 28 Sandusky.
1—Sandusky 8 x 10.

WET MACHINES
1—74" Moore & White.

We are always in the market to purchase your surplus or idle machinery. What have you to offer? Wanted Cylinder and Fourdrinier Machines (complete mills).

Paddy Ross, Pres. **J. J. ROSS COMPANY** **Ben Kurs, Treas.**

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PAPER MAKING EQUIPMENT

NEW, USED, REBUILT
PAPER AND PULP MACHINERY

1—196" Pusey & Jones Slitter and Rewinder.
1—196" Pusey & Jones Unwind Stand.
1—192" Pusey & Jones Single Drum Reel.

JACK ROSS, Pres.

Sustaining Member

AIR HOISTS
1—Two-Ton Ingersoll Rand
1—Five-Ton Ingersoll Rand

BEATERS
2—750 lb. Horne Iron Tub.
1—1000 lb. E. D. Jones Iron Tub Beaters with washers.
2—1200 lb. E. D. Jones Beater—no tubs.
1—1200 lb. Noble and Wood—no tub. Spare new fillings for roll.
3—Valley Iron—Roll 67" diameter x 60" face—wood tub.
6—E. D. Jones 2000# Iron tub—with Warren hydraulic lighter hoists.

BIRD SCREEN PLATE
17 Plate—68 cut. New condition.

BLEACHERS
3—Fletcher high density bleachers—used 8 months.

BLOWERS
2—Wilbraham-Green Rotary Positive Blowers and Gas Exhauster.
2—American—Size 5.

CALENDERS
1—88" Textile Machy. Co. 3 roll Finishing Calender.

CALENDER DOCTORS
1 set of 16 Warren Doctors 104" face with frames.
80 Warren Doctors—various sizes.

CALENDER ROLLS
16 rolls various sizes

CALENDER STACKS
1—2 roll Holyoke 36" face.
1—Pusey & Jones 9 roll 64" face.

COMPRESSOR
1—Nash—Gas or Air Compressor—Type MD 675. Capacity 40 CFM at 10#. Direct connected to 5 h.p.—1750 r.p.m.—440 volt motor.

CONTINUOUS TRAVEL CUT-OFF
1—Langston 74" r.h. Type S. Continuous Travel Cutoff, with change gear box.

CONVERTING EQUIPMENT
2—Sanitary Napkin Machines. With motors and starters.
1—Bliss Double Head Stitcher.
2—Cameron Type 72" Towel Converting Machines.
1—48" Hudson Sharp Facial Tissue converter—with embossing attachment.

COUCH ROLLS
1—19½" diameter x 92" face—brass covered.
2—30" diameter x 92" face—brass covered.

CYLINDER MOLDS
2—110" face x 30" dia.
1—72" face x 30" diameter.
1—76" face x 30" diameter.

DANDY ROLLS
1—122" face 10" dia.
1—138" face 12" dia.
1—129" face 9½" dia.

DRYER DOCTORS
60—Warren Doctors. Various sizes.

DRYERS
2—24" Dia. x 48" Face.
5—52" face x 27" diameter.
1—24" diameter x 22" face.
5—74" face x 30" diameter with gears and bearings.
6—74" face x 40" diameter—with gears and bearings.
15—New 120" face x 48" diameter dryers.

FLAT SCREENS
3—Harmon 16 plate.
1—Montague 6 plate. Ball bearing.
1—12 plate Bagley & Sewall Flat Screens with savealls and spare set of plates.
6—5 plate Sandy Hill Flat Screens
2—Sandy Hill—four plate—roller shoe.

FORK TRUCK
1—Mobile Lift—1 ton capacity. Gasolene.

FOURDRINIER SHAKES
1—Beloit Fourdrinier Shakes.

FOURDRINIER WET END
1—150" Pusey & Jones.

HAMMERMILLS
1—American Hammermill—57" anti friction bearing equipped.
1—Williams 18" Hammermill Ball Bearing.

HOG
1—Mitts & Merrill Hog. 12" x 12".
1—Fitchburg 7 x 9. Ball bearing.
1—Mitts & Merrill.

JORDANS
1—Jones Standard, for motor drive.
1—E. D. Jones Imperial—direct connected to 550 volt motor—with starter.

KNIFE GRINDER
1—84" Covitt & Hanchett with 7½ HP motor. Purchased new—1945.

KNOTTERS
1—Wells Knotter.
2—Trimbey Knotters.

LATHE—Motor Driven
1—Pond 38" Swing, 42' long. Screw cutting power cross feed. Face plate jaw holders 3 steady rests. Motor 10 h.p. with starter—3 phase—60 cycle—220 volts.

LINING MACHINE
1—Downingtown 52" Lining Machine complete with agitated mixing tanks, dryers and Reeves Drives.

MOTORS
1—G.E. 200 h.p.—550 volts—3 phase—60 cycle.
1—Westinghouse 40 h.p. 900 r.p.m.—3 phase—60 cycle—440 volts—with starter.
1—Fairbanks Morse Induction 150 h.p.—600 r.p.m.—3 phase—60 cycle—440 volts—with starter.
1—G.E. 5 h.p. 1800 r.p.m.—3 phase—60 cycle—220 volts—with starter.
1—G.E. 75 h.p. 875 r.p.m.—3 phase—60 cycle—440 volts—with starter.
1—G.E. 100 h.p. 575 r.p.m.—3 phase—60 cycle—440 volts—with starter.
1—G.E. 50 h.p. 490 r.p.m.—3 phase—60 cycle—440 volts—with starter.
1—200 h.p. 285 r.p.m.—440 volts—3 phase—60 cycle.
1—800 Ampere Westinghouse Generator. New.
2—G.E. Slip Ring—125 h.p.—880 r.p.m.—440 volts.

PLATER
1—Holyoke 2 Roll 18" dia. 38" face.

PULLEYS
90—Cone Split and Solid Cast Iron Pulleys. Various Sizes.

PULP EQUIPMENT
1—128" face Kamyr Press.
1—72" Sumner Disc Barker with motor.
2—IMPCO Pulp Screens
2—Trimbey Knotters
2—Apmew Pulp Screens
2—Trimbey Screens
1—Jigger—1 deck—vibrating screen.
1—Zaremba Triple Effect Evaporator — 84" diameter.

PULPERS
1—Voith Pulper 20 tons cap.
1—Bird Pulper.
1—Lannoye Pulper.
1—Lanneye #2 Pulper.

PUMPS
3—Worthington Pumps 10,000 g.p.m.—35' head. Requires 75 h.p. at 850 r.p.m
6—Warren Vertical Pumps. 6" by 3", 135 g.p.m. 80' head. Direct Connected 6 h.p. motor 440 volts.
3—Worthington 5". 2 stage. 200 g.p.m. 224' head Bronze Ball Bearings
1—American Marsh 200 g.p.m.—80' head—3" suction 2½" discharge.
5—De Laval Verticals—540 g.p.m. 1740 r.p.m. —30' head 5" x 5". Direct connected to 7½ h.p. 440 volts.
1—6" Pusey & Jones Open Impeller Centrifugal Stock Pump—belt driven
3—3" Lance Size Pumps—belt driven
1—La Courtney 4 stage. 1000 g.p.m.. 1750 r.p.m.. 750' head. With base and couplings for motor.
2—Worthington Monoblock—250 g.p.m.—130' head —direct connected to 15 h.p.—3500 r.p.m.—220/440 volts, totally enclosed, ball bearing motor.
1—La Courtney 3 stage 1200 g.p.m.. 1760 r.p.m.. 1100' head, with base and couplings for motor.
1—Terry Marsh 750 g.p.m., 230' head. Requires 125 h.p. motor.
2—Ingersoll Rand all bronze 175 g.p.m.—40' head.
1—Worthington 3"—200 g.p.m.—3550 r.p.m.—480' head.
1—Frederick Open Impeller Pump—1800 g.p.m. —100' head with extended base for connection to motor.
1—Ingersoll Rand 300 g.p.m.—60' head—4x3. Direct connected 7½ h.p. 220/440 motor.

REFINERS
1—Weiner Refiner 24" with extended base for direct connection to motor, and a large list of new spare parts.

ROLL GRINDERS
1—Farrel-Birmingham. Will take roll 30" dia. x 191¾" long. Motorized.
1—Lobdell—will handle rolls up to 24" dia. x 110" face

ROTARY SCREENS
2—21 Bird with steel vats, and lined
3—Moore & White

RUBBER PRESS ROLLS
1—120" Face—19" Diameter.
1—119" face x 19½" diameter.
1—100" face x 18" diameter.

REEL
1—102"—3 bowl reel.

SHEETERS
1—136" Hamblet Duplex.
1—104" Hamblet
1—88" Single Knife Sheeter.
1—80" Hamblet Cutter with Erie Layboy 4 piles, and 10 roll backstand.

SHREDDERS
2—36" Sprout Waldron heavy duty shredders—anti friction bearing equipped.
1—Taylor Stiles Portable Pulp Shredder—on wheels.
1—Rythor and Pringle Shredder.
3—36" Mitts & Merrill with 125 h.p. motors and starters.

SLITTERS AND WINDERS
1—41" Waldron Slitter and rewinder. Roll embossing attachment.

SMOOTHING PRESS
1—Black Clawson—128" face—26" diameter Bronzed Top Roll—26" diameter Rubber Covered Bottom Roll. Complete with drive, hydraulic mechanism, frames and Timken bearings.

STONITE PRESS ROLL
1—Stowe Woodward 111" face x 22" diameter.

STUFF PUMPS
1—Dillon 7½ x 12" duplex.

SUCTION FELT PIPE
1—Scofield Suction Felt Pipe.

SUPERCALENDER STACKS
1—7 roll Nerwood—52" face. Complete with drive.

TRIMMERS
1—38" Undercut Trimmer.
1—56" Undercut Trimmer.
1—69" Undercut Trimmer.
1—44" Seybold Holyoke Trimmer.

TURBINES
1—Westinghouse 125 h.p. 125 steam pressure—15 back pressure. Complete. Used 1 year.

VACUUM PUMPS
2—14" x 20" Connersville
1—New Nash Hytor Size MD 671. Direct connected to 1½ h.p. 220/440 motor.

VOITH INLET
1—112" Voith High pressure stock inlet, equipped with lump breaker roll.

SITUATIONS WANTED

SUPERINTENDENT — Practical Paper Maker with engineering background. Can improve manufacturing conditions at minimum expense. Accustomed to handling large, high speed cylinder machines. Address Box 47-227 care Paper Trade Journal. A-10

FINE PAPER SALESMAN—Many years experience, seeks connection with mill or wholesaler, who has paper to sell to first class, hungry accounts. Employed. Address Box 47-234 care Paper Trade Journal. A-10

BEATER ENGINEER wants position. Accustomed to all grades—rag or wood stock. Qualified to take full charge. Married. Address Box 47-237 care Paper Trade Journal. A-24

CHEMICAL ENGINEER — Pulp and paper school graduate. Five years development and supervisory experience, desired change offering opportunity. Address Box 47-250 care Paper Trade Journal. A-17

EXECUTIVE—Twenty Five years in supervisory and management work. Successful record in paper making field. Excellent labor relations. Inventive and mechanical background. Salary range —10,000. Address Box 47-76 care Paper Trade Journal. TF

MANUFACTURING OPERATIONS & MAINTENANCE ENGINEER — Experienced in coated, magazine papers and creped wadding manufacturing and converting, also successful personnel supervision, desires position in mild climate. Technical graduate. Age approximately 40. Address Box 47-263 care Paper Trade Journal. A-10

POSITION WANTED—SUPERINTENDENT —30 years experience in flooring and roofing felt, Mulch papers and deadening felts. Address Box 47-265 care Paper Trade Journal. A-10

DIRECTOR OF PURCHASES—If you are in need of an honest, aggressive young executive to manage your purchasing department contact Box 47-262 care Paper Trade Journal. A-17

GENERAL SUPERINTENDENT — Now employed, but wishes to make change. Expert on book, bond, writing, cat. and groundwood specialties. Will go anywhere. Age 45. Fourdrinier or Cylinder machines. Address Box 47-216 care Paper Trade Journal. A-10

SALES—Sixteen years experience with Paper Converter as Sales Manager, Sales Promotion Manager and Advertising Manager. Able correspondent. Wide acquaintance among paper distributors. Strong on developing new uses and distribution for staple products. Age 39. Prefer New England. Minimum salary $7500. Address Box 47-270 care Paper Trade Journal. A-10

PLANT MANAGER—Technical Director. 10 years experience in coatings and laminations. Knowledge functional packaging materials. All phases of control and development. Address Box 47-264 care Paper Trade Journal. A-17

PLANT MANAGER—Thorough experience in converting paper and boards; wants change to position offering better opportunity. Excellent production and labor relations background. Address Box 47-42 care Paper Trade Journal. A-24

MANAGER - SUPERINTENDENT — Exceptionally broad experience all phases of production on wide range of papers. Have served as consultant with large corporation. Address Box 47-293 care Paper Trade Journal. A-17

POSITION WANTED as Tour Boss or similar. 25 years experience. 13 years on high speed kraft. Now employed. Address Box 47-285 care Paper Trade Journal. A-17

RESEARCH CHEMIST—Ph.D., 16 years broad research experience in resins, wood, pulp, etc. Now employed. Wishes position in pulp and paper research. Address Box 47-282 care Paper Trade Journal. A-10

TECHNICAL SUPERINTENDENT — Control and operating experience on kraft, sulphite, groundwood papers and alpha pulp. Engineering background. Address Box 47-282 care Paper Trade Journal. A-24

SUPERINTENDENT OR ASSISTANT SUPT. —Young man, seventeen years experience, on cylinder machines making folding boards, bottle cap, match boards, test liners and .009 desires position with progressive mill, New England preferred. My employer knows of this ad. Some technical and engineering experience. Address Box 47-279 care Paper Trade Journal. M-1

FOR SALE

TUBE MAKING MACHINE FOR SALE

For Immediate Disposal

1—EPPLER TUBE WINDER (CONVOLUTE style).

Latest model, built in 1945 and used for only 10 months. Complete with several mandrils of different diameters. Will make tubes up to 20" long at rate of 19 to 23 per minute.

ARANDELL PRODUCTS COMPANY
3915 Powelton Ave., Phila. 4, Penna. TF

FOR SALE

1—Practically new, 2000 KW Westinghouse condensing turbo generator unit with practically all auxiliaries, including condenser, etc., generator air cooler, etc. Turbine inlet 275# G. Extracting at 5# and 45# Pressure. Generator rated 2500 KVA, 80% P.F., 3 phase, 60 cycle, 480 volts. Details upon request. Box 47-229 care Paper Trade Journal. A-17

FOR SALE
2 COLOR ROTO

Two color, 38 in. Roto. sheet fed press without automatic feeder. Press run very little. Must sacrifice due to change in plant equipment. Will convert into roll feed if desired.

PRECISE ENGINEERING COMPANY
400 W. Madison, Chicago TF

FOR SALE:
2 used Kidder presses

#1—30 x 40, 3 color, printing surface 30 x 37½ between bearers. 3 plate cylinders and 2 impression cylinders. Press has 2 speed rewind and one speed unwind. 1 rewind roll shaft with chucks for 3" cores.

#2—36 x 48, 2 color, printing surface 36 x 45½ between bearers. Press has one speed rewind drive and is equipped with one unwind and one rewind shaft with chucks for 3" cores.

In addition to the above, we are offering one 15 HP, GE motor, 440 volt, 60 cycle, 3 phase, 880 RPM with line shafting for operating the two above presses. All priced for quick sale.

Address Box 47-281
care Paper Trade Journal
M-1

FOR SALE
GOOD USED ROTOGRAVURE MACHINES

Two color press fully equipped, prints materials in any widths up to 4" and rewinds in roll.

Four color machine prints paper or cardboard up to 30" wide delivers in sheets or rewinds in roll.

Two color machine prints paper or cardboard up to 36" wide and rewinds in roll.

65" three ply laminating machine.

Address Box 47-289 care Paper Trade Journal. A-10

FOR SALE—1 Hamilton-Corliss Variable Speed Twin Engine, size of cylinders 12" x 24". Also Triple-Deck Frames for ninety 36" dryers any width. The Chesapeake Paperboard Co., Baltimore 30, Md. TF

CLASSIFIED ADS BRING RESULTS

FOR SALE

FOR SALE—BRAND NEW HAYDEN NON-CORROSIVE BRASS WIRE CLOTH 7 SHEETS 70"x96" #14 AT 43c PER SQUARE FOOT AND 17 SHEETS 70"x96" #50 AT 49c PER SQUARE FOOT.

J. M. RIOS & COMPANY
11 Broadway, New York 4, N. Y.
TF

FOR SALE

2—8 ft. diameter floating dryers, 175" face, suitable for seventy five lbs. steam pressure.
1—Practically new pulp stacker, built by Link Belt Pulp Company. Thirty ft. conveyor. Cutler Hammer switch and starter, 30" wide and 9½" center to center, raises 7 ft. to 18 ft., and takes 7½ HP motor. Recommended to be in perfect condition.

FRANK H. DAVIS CO.
175 Richdale Ave., Cambridge, Mass.
A-24

FOR SALE

1—75 HP. G.E. Slip ring motor 3 ph. 60 cy. 440 volts, complete with primary starter, grids and rheostat.
1—Ryther & Pringle paper duster. Inclined 8'x6'x16'.
1—8x10 Connersville vacuum pump.
1—10x24 Connersville vacuum pump.
1—14x20 Connersville vacuum pump.
1—375 KW Westinghouse Turbo Generator 150# Pressure, 3 ph. 60 cy. 440 volts, complete with jet condenser, pumps and switch board.
1—Shower pressure pump, belt driven, 4" inlet 2½" outlet, 125 gallons 50# pressure.
6—M.&W. expansion winder shafts. 2—19, 2—31, 2—46 (NEW).
1—Granite press roll 16" dia., 80½" face, 84" between shoulders. Journals 7" dia., 10" long.

FRANK P. LYDEN
Fort Edward, N. Y.
A-10

FOR SALE

New HUDSON-SHARP, "never been used," 52" Aniline four (4) color printing press. Immediate shipment from Owners. Reason for selling—change in product sales. Complete specifications and price upon request. Address Box 47-209 care Paper Trade Journal. A-10

FOR SALE

1—56" Seybold cutter, Model 6ZE, serial No. 6771, and equipped with 5 H.P. motor and starter.

SHARTLE BROS. MACHINE CO.
Middletown, Ohio
A-17

MACHINERY FOR SALE

110" Hamblet heavy duty Mill Type Sheeter.
54" Inman shear cut Slitter.
54" Brown & Carver hand clamp Power Cutter.
34" Waldron Reel.
70" Meisel two color rotary.
25 x 38 Babcock Cylinder Press, 3-roller.
20 x 28 six-rod Standing Press.
14 x 22 John Thomsen.
American heavy duty Cross Cut Saw.
Bunn Tying Machine.
Baling Presses—NEW—both hand and power.

THOMAS W. HALL COMPANY, Inc.
120 West 42nd St., New York 18, N. Y.
TF

FOR SALE—Saranac 12" single head wire stapling machine Serial #6482, complete with motor. Excellent condition. Price $300.00. Orchard Paper Company, 3914 N. Union Blvd., St. Louis, 15, Mo. A-17

FOR SALE | FOR SALE | FOR SALE

TELEPHONE
HUMBOLDT 2-2177

CABLE ADDRESS: JACKROSS

ROSS PAPER MACHINERY CORP.

265 PASSAIC STREET
NEWARK 4, N. J.

CONVERTING
PAPER MAKING EQUIPMENT

NEW, USED, REBUILT
PAPER AND PULP MACHINERY

FOR SALE

9—NEW TUBE WINDING MACHINES—PURCHASED FROM W.A.A.

IMMEDIATE DELIVERY

Mfg'd by Baldwin Locomotive Works. Maximum width of work 120". Complete with 2 HP 3/60/220-440 1735 RPM motor with Reeves reducer. Approximately 6" upper roll and 2-8" lower rolls. The upper roll is hydraulically operated. Two air cylinders are mounted on the top of the frame which are connected to the upper beam to the two holes which are shown in the left and right hand brackets for giving the downward pressure to the upper roll. This also can be hand operated. The dia. of the bearings on the rolls is approximately 3". Each of the two lower rolls are hollowed and trimmed and have electrical units inside of same for heating purposes. These machines were originally built for the following operation: In between the upper and the two lower rolls (which can be seen in this picture but which are under the flat sheet metal plate) there is set a long mandrel or arbor. On this arbor, which revolves, is placed the end of a paper roll previously impregnated through some type of tank set underneath the machine, through the tension device, over the head plate (which hides the 2 rolls) then to the wind-up mandrel. All these units are electrically heated with timer controls and ampmeters to each of the front and back rolls and the electrical hot plate. These machines may be readily converted for use in plastic sheet work. These machines were built in 1944, but never used, at a cost of $17,345 each and are complete with push button controls, 30 cast iron chromium plated mandrels for each machine, 15 to 18 heater elements for each machine, right and left hand junction boxes, etc. Weight 18,000#. Price f.o.b. car Newark, N. J. . . **$3500.00 ea.**

Blueprints on Request

The material listed below is unused and in A-1 condition. Make us an offer.

One 'Siamese' Dryer felt #62922, 84" wide, 63 yds. long and weighting 470 lbs.
Forty (40) 22" x 44" 6 ply, capped ends, molded diaphrams.
Sixteen (16) chipper knives, 'Carthage' Chipper 84 inches Heppenstall, Chrome alloy.

Wire screens as listed below:

1 pc.	74x120	40 mesh bronze facing
1 pc.	74x120	14 mesh bronze backing
1 pc.	64x122	10 mesh KA2SMO
18 pcs.	17⅝x115	20 mesh stainless steel
18 pcs.	17⅝x115	60 mesh stainless steel
2 pcs.	77x120	14 mesh bronze backing
6 pcs.	112x115	12 mesh bronze backing
1 pc.	80x115	14 mesh brass cylinder
1 pc.	86¼x104	22/24 mesh bronze facing
1 pc.	104x114	12 mesh bronze backing
4 pcs.	104x114	40 mesh bronze facing
2 pcs.	74x115	40 mesh bronze facing

Address Box 47-275
care Paper Trade Journal **A-17**

SUPERCALENDER ROLLS—FOR SALE

2—Chilled Iron Rolls. 10" dia. x 36" face.
2—Chilled Iron Rolls. 14" dia. x 36" face.
1—Chilled Iron Roll. (Bottom Roll) 15" dia. x 36" face.
1—Chilled Iron Roll (Top Roll) 15" dia. x 36" face.
5—Paper Filled Rolls. 14" dia. x 36" face.
1—Chilled Iron Roll. (Top Roll) 14" dia. x 41" face.
1—Chilled Iron Roll. (Bottom Roll) 15" dia. x 41" face.
2—Chilled Iron Roll. 10" dia. x 41" face.

As is—subject to prior sale—available for inspection.

Address Box 47-274
care Paper Trade Journal
A-10

FOR SALE

Folding Box Plant located in East, about 100 miles from N.Y.C. Six presses plus extra equipment including new 20,000 sq. ft. one story modern building. $185,000.00. Write Paper Trade Journal, Box #47-290.
A-17

PAPER COATING MACHINERY — Waxing, Oiling, Gumming, Gluing, Carboc, Laboratory Coating and Treating Machines. High speed. New improvement. MAYER MACHINE COMPANY, Inc., 1155 Scottsville Road, Rochester, 11, N. Y. T7

DOCTOR RODS—for Carbon and Wax Paper Machines. Precision wound and uncoilable. Blue print and price list on request. Address Box 47-223 care Paper Trade Journal. A-24

FOR SALE

FOR SALE

FOR SALE

FOR SALE

1—65" Holyoke nine roll Supercalender, anti friction equipped
1—54" Holyoke seven roll Supercalender, motor drive
1—56" nine roll Norwood Supercalender, motor drive
1—20 C Waterbury Drive.
1—No. 2 Lanneye Pulper.
1—150 HP G.E. slip ring motor, 720 RPM, form M, 550 volt, 3 phase, 60 cycle, with G.E. controller and automatic overload controller, very good condition.
5—7 HP G.E. vertical, ball bearing motors, 550 volt, 2 phase, 60 cycle, 575 RPM.
2—Tolhurst centrifiners with 10 HP motors, 550 volt, operated as a pair.
1—Dominion Engineering Company adjustable double slice for 14" pond, deckle adjustment is from 102" maximum to 82" minimum, new 1941.
1—Dodge No. 200 B, 1400 X, Diamond "D" cut off coupling or clutch. Mechanism bore 5.996". Hub bore 6.498". In excellent condition.
3—New Lieweilen ball bearing variable speed drives.
2—1000 lb. washers, iron tub.
1—Procter and Schwartz 96" three unit automatic roller loop dryer
1—64" Tissue creping machine, four dryers 36 x 66" and new.
1—65" New special box type coating machine
2—60" Laminators.
6—Twelve plate flat screens
1—150" Moore & White four drum winder
1—60" Clark sheet cutter
2—Finlay 50" sheet cutters, one with Moore & White layboy
2—7 ft. x 20 ft. rotary boilers, good for 40 lb. pressure, or tanks
1—50" Finley Cutter with Moore & White layboy.
1—Jones Leith Walk screen
2—Twenty plate Moore & White screens, purchased new in 1929, equipped with stainless steel .014" plates.
5—Moulds 36 x 84" for Lancaster Washer
6—Couches about 24" diameter for Lancaster Washer
1—Merrill and 1 Wolverine Hot Melt System.
1—6000 lb. new Walker Lift Platform 6 ft. x 8 ft. with 1 HP. 220 volt motor.
2—Locke Regulators, Type 1-M-1-L #1455
1—Wallace Tierman Dry Chemical Feeder, practically new, Serial #D1385
1—114" Kidder two drum Winder
1—60" Clark Cutter.

FRANK H. DAVIS CO.
175 Richdale Avenue, Cambridge, Massachusetts TF

1—Standard belt driven Emerson Jordan.
1—#1 Claflin Refiner.
SOS Bag Machines making 1, 2, 3, 7, 8 & 10 lb. bags.
1—52"; 1—60"; 1—64" Waldron Brush Coaters. Festoon equipment. New J. O. Ross Drying Oven. 5 Buffalo Blowers. New winding reel. Motor equipments.
1—Sheridan Die Press 27x44"—rebuilt.
5—Rotary Embossing Machines: 4—33", and 1—41".
Power Paper Cutter: 1—44" 20th Century Seybold; 1—34" late Oswego. 1—45" Sheridan late model. 1—54" Seybold Holyoke Mill Type.
6—Potdevin and 1 Lockport flat and square bag machines, complete with motor equipments, making bags from ¼ to 35 lbs.
1—64" complete creping machine.
1—Knowlton and 1—Langston motor driven spiral tube winders with automatic cut-off saws and recutters.
2—#2 Lanoye Pulpers.
1—2 bowl upright reel, bowls 16" in diameter x 85½" wide face.
3—New high speed Lockport Flat and square bag machines making bags from 2 to 30 lbs.
1—55" wide Hamblet Vickery Layboy.
1—94" Duplex Moore & White Rotary Sheet Cutter.
1—48" Shartle & Bevis Waxing Machine.
1—36" Beck Shear Cut Slitter and Rewinder.
1—48" Inman board slitter, complete with motor.
1—450 ton Dunning & Boshert Hydraulic Press with pumps.
2—63" Dietz Toilet Perforators, sheets 4½x4½" and 4½x5".
1—90" Finlay Rotary Sheeter with Moore & White Layboy and 8 roll backstand.
1—51" Hamblet Rotary Sheeter with Moore & White Layboy and 8 roll backstand.
1—90" Creping Machine with plasticizing equipment, dryers and rewind. Reeves Drive.
1—92" Dillon Duplex Sheet Cutter with Brannon Ream Folder and 24 roll doubledeck backstands.
1—40" Clark Rotary Sheet Cutter.
2—250 HP, Westinghouse 3 phase, 60 cycle, 2200 Volt AC motors, 400 RPM with couplings for Jordan Drives.

GIBBS-BROWER COMPANY, INC.
21 East 40th St., New York 16, N. Y. TF

REVAMPING AND REBUILDING MILL AND CAN OFFER FOR SALE

Carrick Combustion controls for two boilers to be sold as unit.
1—Noble & Wood Mammoth Jr. Jordan ¼" Filling.
1—Brass covered finishing press roll 17¾" dia. x 85½" face complete with bearings and Noble & Wood friction drive.
1—4000# capacity motor driven freight elevator with automatic stop control—can be inspected in operation at our plant.
2—8" Barnes centrifugal sewage pumps.
10—100" screen plates for No. 2-A Bird Screen. Slots .022—never used after being recut once
1—Brass covered press roll 11½" dia x 69" face—journals 4-13/16" dia. x 7½" long.
1—Rubber covered press roll 13" dia. x 86¼" face—journals 4-15/16" dia. x 10¼" long
11—29" face cast iron tapered pulley—3-15/16" bore, taper 31"-29½"
2—29" face cast iron tapered pulleys—3-7/16" bore, taper 31"-30"
1—20" face cast iron tapered pulley—3-15/16" bore, taper 30"-28½"
1—24" face cast iron tapered pulley—3-7/16" bore, taper 31⅛"-29⅛"
3—Steel split pulleys 60" dia. x 31" face x 5-15/16" bore.
3—Steel split pulleys 60" dia. x 41" face x 5-15/16" bore.
1—Cast iron split pulley 60" dia. x 21" face x 3½" bore.
1—Cast iron split pulley 40½" dia. x 21" face x 3½" bore.
1—Cast iron split pulley 84" dia. x 38" face x 5-15/16" bore.
1—Cast iron split pulley 72" dia. x 18" face x 8¼" bore.
1—Paper pulley 24" dia. x 21" face x 4½" bore.
1—4½" dia. x 88" face rubber covered squeeze or wringer roll—Journals 1-15/16" dia.
1—9" dia. x 88" face calender roll—3" dia. journals.
13—6¼" dia. x 92" face steel drier felt rolls with 1-7/16" x 6½" journals.
3—Pair Noble & Wood lighter stands complete with lighter booms and bearings for 8" dia. journal beater roll.
1—Rubber covered roll 17¾" dia. x 89" face, journals 4⅝" dia. x 9" long with Noble & Wood friction drive.

A visit to the mill would prove profitable as we have many items for sale too numerous to mention. See J. R. Stephenson, Plant Engineer at our plant in Walloomsac, N. Y.

WALLOOMSAC PAPER MILLS, INC.
Mills: Walloomsac, New York
Main Office: 25 Vanderbilt Avenue
New York 17, N. Y. TF

WANTED

WANTED TO BUY

118" to 124" cyl. or Fourdrinier machine. Desire delivery in last quarter of 1947. Address Box 47-288 Paper Trade Journal. A-10

WANTED

Sulphite Bond Papers in rolls. All sizes, colors and weights. All grades.

CONTACT

AMERICAN BUSINESS SYSTEMS
1229-31-33 Belmont Ave.
Philadelphia 4, Pa.
A-10

BOARD MILL

Now being erected in East. Will be ready in approx. 5 to 6 mos. Looking for contracts from well rated accounts on .09 to .016 pt. Corrugated Liner, Lt. Wt. Tubing & Chip Specialties. Write Paper Trade Journal Box No. 47-287.
A-17

FOR SALE—1—Noble-Wood cycle beater for Laboratory Pulp Testing and Hydrating, accurate control of roll. Purchased 1941. Used very little. Beater in good condition. Complete except motor. Priced for immediate sale Address Box 47-119 care Paper Trade Journal. My-8

WANTED

WE BUY — WE SELL — WE TRADE

Chemicals — Colors — Pigments — Solvents — Glues — Starches. Other Raw Materials.

CHEMICAL SERVICE CORP.
80 Beaver St., N. Y. 5 TF

WANTED

WILL PAY CASH

for Brown Kraft, heavy weight, about 70 basis weight, large size rolls, approximately 30" diameter.

We are desirous of making a permanent mill connection for approximately two carloads of this paper per month or will buy individual lots.

Contact
CONTINENTAL SPECIALTY CO.
368 E. 149 St., New York 55, N. Y.
A-10

WANTED—Brightwood Box Machine. Address Box 47-71 care Paper Trade Journal. TF

WANTED—Shear cut Langston or Cameron Slitter, capacity 48 inch or 60 inch width. Must be in first class condition. Address Box 47-186 care Paper Trade Journal. TF

WANTED — DISCARDED PAPER MILL FELTS. HIGHEST PRICES paid for all kinds of discarded paper mill felts. LARGE or SMALL QUANTITIES accepted. Prices quoted immediately on receipt of samples. ADDRESS GLASER AND YOFFE, INC., 80 NORTH MAIN ST., NATICK, MASS. TF

WANTED

WOOD PULP MFG. PLANT WANTED

For purchase or lease. Must have the following equipment:

1. Material handling equipment (conveyors for transferring waste paper into the process).
2. Digesters.
3. Rifflers, screens and similar equipment.
4. Thickeners and washers.
5. Drying machines (pulp sheet forming equipment similar to Fourdrinier).
6. Paper cutting machines, pulp compressing presses and baling equipment.
7. Pumps and piping capable of handling heavy pulp slurries.

Also, if possible, pilot plant equipment of the same type as above to carry out small scale production tests.

Address Box 47-193 care Paper Trade Journal. TF

WANTED

Side rolls and odd lots of any kind of paper and board—12½" and wider any color preferably white. Also sheets all sizes.

CONTACT

GEORGE S. BLEYER
BLEYCO PAPER CORP.
214 Sullivan St., New York 12

M-29

PAPER MILL FACILITIES WANTED

for experimental purposes
period of about six months

EQUIPMENT REQUIRED

a 1 cylinder wet Machine about 52 inch and a small beater. We are prepared to offer attractive proposition. Box #47-280 care Paper Trade Journal. A-10

WANTED — W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic Presses, Sheridan Presses, Dryers. Address Box 47-70 care Paper Trade Journal. TF

PAPER MANUFACTURER desires to purchase or invest in converting business of standard paper products. Address Box 46-708 care Paper Trade Journal. TF

WANTED

PROPOSAL WITHOUT BOLONY

Directed to mill owners who remember the bleak, unprofitable years prior to 1938 when more than 87 mills were totally idle and many others only partially active; who realize prevailing conditions will not continue forever; who operate marginal mills; who are confronted with labor trouble, lack of paper makers, supervision, materials; who are dependent for sales upon brokers or agents:

A 50 year old, aggressive, self-contained organization with a reputation for ethical business conduct and ingenuity, whose diversified production is distributed by 500 paper jobbers and direct representatives to virtually every kind of industry in the nation, is interested in additional tonnage by outright purchase of mills with privilege of sellers to retain financial interest and accruable profits.

If the above is of interest, a meeting of principals is recommended at mutual convenience. Replies will be kept in strict confidence. Address Box No. 47-267, Care of Paper Trade Journal.

TF

WANTED

ANILINE PRINTERS
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Manhattan Rubber Division

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American Resinous Chemicals Corp.
Arabol Mfg. Co.
Casein Co. of America,
Division of The Borden Co.
Hercules Powder Co., Inc.
Kelco Company
Monsanto Chemical Co.
Philadelphia Quartz Co.
United States Rubber Co.

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Biggs Boiler Works Co.
Dilts Machine Works, Inc.
Dorr Company
Downingtown Mfg. Co.
Corp.
General American Transportation
Improved Paper Machy. Corp.
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D. J. Murray Mfg. Co.
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Noble & Wood Machine Co.
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Shartle Brothers Machine Co.
Valley Iron Works Co.

AIR CONDITIONING
Spray Engrg. Company

ASBESTOS PRODUCTS
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Manhattan Rubber Division

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Shartle Brothers Machine Co.
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Weber, Herman G.

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Thomas W. Hall Co.

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Carthage Machine Co.
D. J. Murray Mfg. Co.
Valley Iron Works Co.

BARS
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E. D. Jones & Sons Co.
The Moore & White Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

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Jones, E. D., & Sons Co.
Link Belt Company
Magnus Metal Corp.
Raybestos-Manhattan Inc.
Manhattan Rubber Division
Shartle Brothers Machine Co.
SKF Industries, Inc.
Timken Roller Bearing Co.
Valley Iron Works Co.
T. B. Wood's Sons Company

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Black-Clawson Company
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Hermann Mfg. Co.
E. D. Jones & Sons Co.
Morden Machines Co.
Noble & Wood Machine Co.
J. J. Ross Company
Ross Paper Machy. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

BED PLATES
Bahr Brothers Mfg. Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Lukenweld, Inc.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

BELTING
Alexander Brothers
Allis-Chalmers Mfg. Co.
Link Belt Company
Raybestos-Manhattan Inc.
Manhattan Rubber Division
J. E. Rhoads & Sons
United States Rubber Co.
T. B. Wood's Sons Company

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Simonds Saw & Steel Co.

BLEACHERS
Improved Paper Machy. Corp.

BLEACHING BOILERS, ROTARY
The Biggs Boiler Works Co.

BLEACHING APPARATUS
The Biggs Boiler Works Co.
Improved Paper Machy. Co.
E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
Noble & Wood Machine Co.
Roderick O'Donoghue
Pennsylvania Salt Mfg. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.

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Carthage Machine Co.
Kalamazoo Tank and Silo Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company

BOILERS
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Biggs Boiler Works
Foster Wheeler Corp.

BOTTOMS
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Kalamazoo Tank & Silo Co.
Valley Iron Works Co.

CALENDERS
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Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
Lobdell Co.
Moore & White Co.
Perkins & Sons, Inc., B. F.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works
Waldron Corp., John

CASEIN
Casein Co. of America,
Division of The Borden Co.
Hercules Powder Co., Inc.

CASTINGS
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Black-Clawson Company
Carthage Machine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Grinnell Company
Hamblet Machine Co.
E. D. Jones & Sons Co.
Link Belt Company
Lobdell Co.
Magnus Metal Corp.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Union Machine Company
Union Screen Plate Co.
Valley Iron Works Co.
Walworth Company

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Pennsylvania Salt Co.

CENTRIFUGAL MACHINERY
Bird Machine Co.
De Laval Steam Turbine Co.
Nichols Engrg. & Research Corp.
Ross, J. O., Eng. Co.
Shartle Brothers Machine Co.
Williams Apparatus Co.

CHAINS
Link Belt Company

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Amer. Resinous Chemicals Corp.
Ansul Chemical Co.
Calco Chemical Co.
Calgon, Inc.
The Cowles Detergent Company
Diamond Alkali Co.
Dispersion Process, Inc.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuffs Corp.
Geigy Co., Inc.
Gottesman & Co.
Hooker Electrochemical Company
Kelco Company
The Kinsley Chemical Company

TO BUY

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The Mathieson Alkali Works, Inc.
Monsanto Chemical Company
Nopco Chemical Co.
Naugatuck Chemical Div. of U. S. Rubber Co.
Niagara Alkali Company
Paper Makers Chemical Department, Hercules Powder Co.
Pennsylvania Salt Mfg. Company
Philadelphia Quartz Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Solvay Sales Corp.
United States Rubber Co.
Witco Chemical Co.
Wyandotte Chemicals Corp.

CHESTS
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CHLORIDE OF LIME
Pennsylvania Salt Co.

CLAY
A. M. Meincke & Sons Inc.

CLEANERS
Adell Chemical Company

CLEANING MATERIALS
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Bird Machine Co.
The Cowles Detergent Company
The Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
Paper Makers Chemical Department Hercules Powder Co.
Monsanto Chemical Co.
Nichols Engrg. & Research Corp.
Oakite Products, Inc.
Pennsylvania Salt Mfg. Co.
Philadelphia Quartz Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Solvay Sales Corp.
Wyandotte Chemicals Corp., J. B. Ford Division

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Hudson Sharp Machine Company
Farrel-Birmingham Co.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Wks.
T B. Wood's Sons Company

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Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
South Wabash Engrg. Co.
Waldron Corporation, John
Weber, Herman G.

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Columbian Carbon Co.
Chemical & Pigment Division, The Glidden Company
C. K. Williams & Co.

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Ingersoll-Rand Co.
Nash Engineering Co.

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Ferguson, Hardy S.
Hardy, George F.
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The Kohler System Company
Main, Inc., Chas. T.
The MacPherson Company
Roderick O'Donoghue
The Rust Engrg. Co.
J. E. Sirrine & Co.
South Wabash Engrg. Co.
Stone & Webster Engrg. Corp.

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Thwing-Albert Instrument Co.

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Cochrane Corp.
Harry W. Dietert Company
Stickle Steam Specialties Co.

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Link Belt Company
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Ross Engineering Corp., J. O.

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Foster Wheeler Corp.

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Rodney Hunt Machine Co.
Smith & Winchester Mfg. Co.
Sonoco Products Co.
Walker-Goulard-Plehn Co.

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Farrel-Birmingham Co., Inc.
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Link Belt Company
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John
T. B. Wood's Sons Company

CRANES
Link Belt Company

CUTTERS
Dilts Machine Works
Gibbs-Brower Company, Inc
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Noble & Wood Machine Co.
Perkins & Son, Inc., B. F.
Simonds Saw & Steel Co.
The Smith & Winchester Mfg. Co
South Wabash Engrg. Co.
Taylor Stiles & Co.

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Perkins & Son, Inc., B. F.
Raybestos-Manhattan Inc., Manhattan Rubber Division
Valley Iron Works Co.

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Improved Paper Machy. Corp.

DECKLE STRAPS
Stowe Woodward, Inc.

DE-INKING
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Dilts Machine Works
Kinsley Chemical Co.
Roderick O'Donoghue
Shartle Brothers Machine Co.

DEINKING CHEMICALS
Adell Chemical Company
Philadelphia Quartz Co.

DETERGENTS
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Cowles Detergent Co.
Philadelphia Quartz Co.

DEWAXING CHEMICALS
Adell Chemical Company

DIGESTERS
Biggs Boiler Works Co
Foster Wheeler Corp.
General American Transportation Corp.
Pusey & Jones Corp.

DISPERSING AGENTS
Adell Chemical Company
New York Color & Chemical Co.

DOCTORS
Bird Machine Company
Black-Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Lodding Engineering Corp
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.

DOCTOR BLADES
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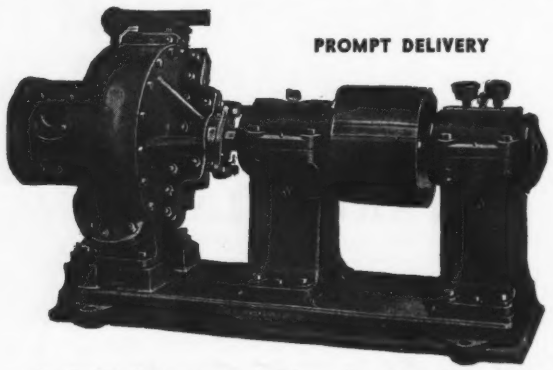

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Bird Machine Co.
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De Laval Steam Turbine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
General Electric Company
Gibbs-Brower Company, Inc.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
Murray, D. J., Mfg. Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
T. B. Wood's Sons Co.
Valley Iron Works Co.

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Stickle Steam Specialties Co.

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E. D. Jones & Son Co.
Moore & White Co.
Noble & Wood Machine Co.
D. J. Murray Mfg. Co.

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Geigy Co., The
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National Aniline Division, Allied Chemical & Dye Corp.
New York Color & Chemical Co.
C. K. Williams & Co.
Witco Chemical Co.

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Roehlen Engraving Works

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Wallace & Tiernan

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Orr Felt & Blanket Co.
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Waterbury Felt Co.
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FELT GUIDES
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Waldron Corp., John

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Amer. Resinous Chemicals Corp.
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W. H. Loomis Talc Corp.
Vanderbilt Co., R. T.
Witco Chemical Co.

FILTERS
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General American Transportation Corp.
Improved Paper Machy. Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
Witco Chemical Co.

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Walworth Company

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Raybestos-Manhattan Inc, Manhattan Rubber Division
United States Rubber Co.

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Oliver United Filters
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Shartle Brothers Machine Co.
South Wabash Engrg. Co.

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Raybestos-Manhattan Inc., Manhattan Rubber Division

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Williams Apparatus Co.

GASKETS
Raybestos-Manhattan Inc., Manhattan Rubber Division

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Downingtown Mfg. Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Wks
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

GRINDERS
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Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell Co.
Norton Company
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The Sandy Hill Iron & Brass Wks

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Norton Company
United States Rubber Co.

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Noble & Wood Machine Co.
Ross Engineering Corp., J. O.
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Valley Iron Works Co.

TO BUY

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Rodney Hunt Machine Co.
Ingersoll-Rand Co.
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Manhattan Rubber Division
United States Rubber Co.

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Spray Engrg. Company

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The B. F. Goodrich Chem. Co.

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N. P. Bowsher
The Bristol Company
Cochrane Corp.
The Foxboro Company
General Electric Company
W. & L. E. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Taylor Instrument Cos.
Thwing-Albert Instrument Co.
Testing Machines, Inc.
Wallace & Tiernan Instrument Co.
Williams Apparatus Co.

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Perfecting Service Company

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E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
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Dilts Machine Works, Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
Simonds Saw & Steel Co.
Valley Iron Works Co.

KNOTTERS
Improved Paper Machy. Corp.

LABORATORY EQUIPMENT
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Bauer Brothers Co.
The Biggs Boiler Works Co.
Dilts Machine Works
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Taylor Instrument Companies
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Valley Iron Works Co.
Williams Apparatus Co.

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Chemical & Pigment Division,
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Automatic Transportation Co.

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Montague Machine Co.
Lobdell Co.
Testing Machines, Inc.
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The Spray Engineering Co.

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Spray Engrg. Company
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General Electric Company
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.

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Shartle Brothers Machine Co.

PACKING
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The Manhattan Rubber Mfg. Div.
of Raybestos-Manhattan, Inc.
United States Rubber Co.

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Black-Clawson Company
Dewaingtown Mfg. Co.
Gibbs-Brower Company, Inc.
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Lukenweld, Inc.
Moore & White Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

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E. D. Jones & Sons Co.
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Valley Iron Works Co.

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Thomas W. Hall Co.
Hudson Sharp Machine Company
Langston Co., Samuel M.
South Wabash Engrg. Co.

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Black-Clawson Company
Davis, Frank H., Co.
Gibbs-Brower Company, Inc.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
South Wabash Engrg. Co.
Waldron Corp., John

PENSTOCKS, WELDED STEEL
The Biggs Boiler Works Co.

PERFORATED METAL
Allis-Chalmers Mfg. Co.
Harrington & King Perforating Co.

PIPE
Black-Clawson Company
Crane Company
Grinnell Company
Johns-Manville Sales Corp.
Stowe-Woodward, Inc.
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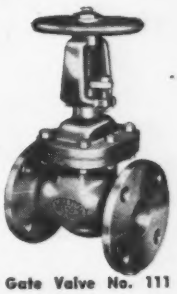

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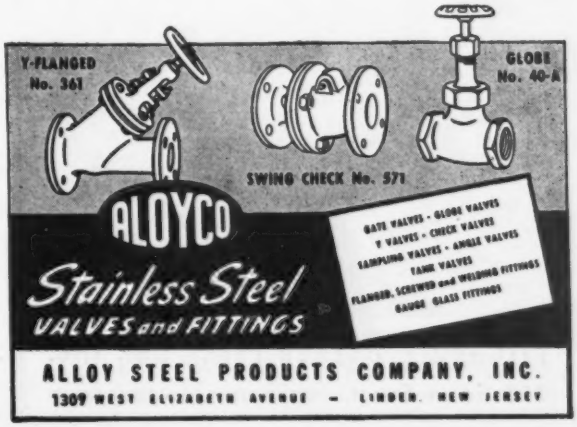

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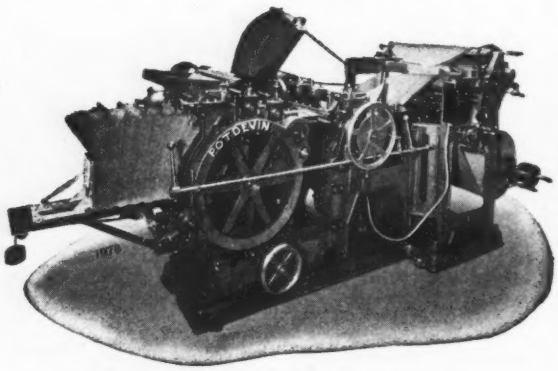

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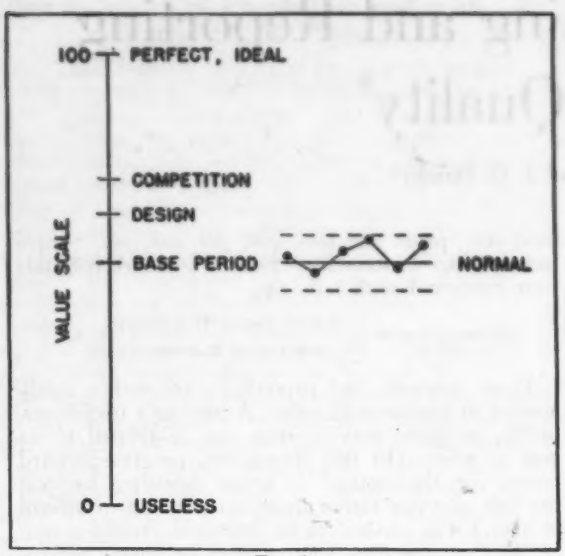

FIG. 1

characteristics. For example, if a sheet of paper is a unit of production, the presence of one or more slime holes larger than some specified size can constitute a defect; an observed basis weight less than some specified value can constitute a defect; or one or more wrinkles of specified type can constitute a defect.

Having defined the defects, they must then be transformed to a customer experience scale by assignment of demerit weightings or seriousness categories. There are many possible ways in which that can be done but experience indicates that four classifications as to seriousness are adequate and may be described as follows:

Class A Defects—Very Serious — 100 demerits
The defect makes it impossible to use the product, is certain to cause failure of serious nature, or is liable to cause personal injury or property damage.

Class B Defects—Serious — 50 demerits
The defect will possibly but not surely cause Class A failure, will surely cause failure of a nature less serious, e.g., that can be overcome by adjustment.

Class C Defects—Moderately Serious — 10 demerits
The defect is not likely to cause failure but is likely to cause trouble of less serious nature. Major defects of appearance or workmanship.

Class D Defects—Not Serious — 2 demerits
Incidental type of defects that will not cause failure or trouble. Minor defects of appearance and workmanship.

Whatever classification of defects and demerit weightings are selected, it is then possible to evaluate product quality in terms of demerits per unit. To attain maximum utility there must be established an expected or normal value of demerits per unit and means for deciding when observed values of demerits per unit differ from the expected value by amounts greater than those due to sampling fluctuation. The former is done by examining sample units over a long period of stable production known as the base period. The latter is accomplished by the procedure common to simple statistical tests of hypotheses.

To illustrate: Assume that during a base period of three years a sample of $N_1 = 11{,}348$ units of product has been examined and found to include 146 class A defects, 1628 class B defects, 4652 class C defects, and 6114 class D defects as indicated in Table I. Then the expected or normal quality level is

$$\text{E.Q.L.} = \frac{\Sigma W d}{N_1} = \frac{154{,}748}{11{,}348} = 13.64 \text{ demerits per unit. (DPU)}$$

If, during a month or other period over which product quality is to be compared with base period or expected quality, $N_2 = 315$ units of product are examined then the standard deviation of demerits per unit is

$$\delta_{DPU} = \sqrt{\frac{\Sigma W^2 d}{N_2 N_1}} = \sqrt{\frac{\text{[illegible]}}{11348\ (315)}} =$$

$$\sqrt{1.684} = 1.298 \text{ demerits per unit}$$

and, if no variation other than chance sampling fluctuation be present, the observed demerits per unit can be expected to fall, in the great majority of cases, within the range EQL$\pm 2\delta_{DPU}$ or $13.64 \pm 2(1.298)$ or from 11.04 to 16.24 demerits per unit.

Such data may be plotted readily in conventional Shewhart control chart form, where the horizontal scale is time, the vertical scale is demerits per unit, the solid line is expected or normal base period quality (EQL) and the dotted limits are EQL$\pm 2\delta_{DPU}$. Such charts are very useful and are interpreted in conventional manner *(3)*.

It should be noted, however, that the limits of such

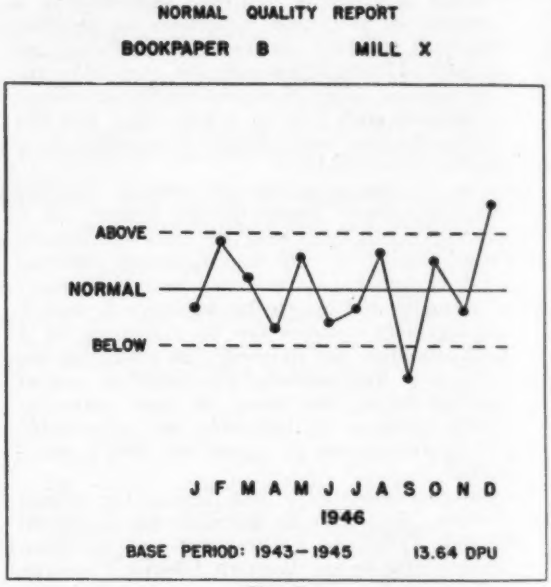

FIG. 2

demerits per unit charts vary in width as the sample size (N_2) varies. Since varying limit widths may be confusing to those not accustomed to using control charts, it may be preferable to use a further transformation to keep the limits at constant width. Such a device consists of using the horizontal time scale as before but a vertical scale in standard deviation or t units where the solid line or normal expected quality is at $t=0$ and the limits are at $+2t$ and $-2t$. For a monthly value

$$t = \frac{\text{expected DPU} - \text{observed DPU}}{\delta_{DPU}}$$

For example, in the period mentioned above where $N_2 = 315$ units were examined, if defects which aggregated 14.50 DPU were observed

$$t = \frac{13.64 - 14.50}{1.298} = \frac{-0.86}{1.298} = -0.66$$

and the quality of the sample for that period is be-

TABLE I

Defect Class	Demerit Weighting (W)	Number of Defects (d)	Wd	Wd^2
A	100	146	14,600	1,460,000
B	30	1438	81,400	4,070,000
C	10	4653	46,520	465,200
D	2	6114	12,228	24,456
			154,748	8,019,656

low or poorer than base period or expected quality, but by an amount so frequently caused by sampling fluctuation alone that there is no basis provided by the numbers themselves for concluding that quality of the production for that period is other than normal.

For further illustration, consider the same product which gave an expected quality level of 13.64 DPU over the 3-year base period. Table II shows values for the following 12 months and the method of arriving at the monthly t values. Figure 2 shows these values plotted in Normal Quality Report form.

Difficulties with Application

Numerous pitfalls exist in the use of the type of quality statistics described above. Where a wide variety of products are made in several mills, the difficulty of maintaining a quality-dollar common to all mills and products is great. It is essential that class weightings and definitions be constant and consistent in order that the interpretation of the Normal Quality Report by top management can be common to all products in the sense that the interpretation of the profit and loss statement can be common to all products and the dollar is still a dollar whether it refers to book paper, newsprint or wallpaper. Considerable staff coordinative effort is thus required and a careful interpretation of the basic class definitions by products must be made before weightings are made for a new class of end uses and products.

It will also be appreciated that if two different groups within an organization attempt to prepare a Normal Quality Report, considerable conflict between the two must inevitably result. The complexity of dimension of the Normal Quality statistic is such that only one report can be prepared within an organization without getting into many of the difficulties that government bureaus now face with conflict of statistical indices reputedly designed to measure the same quantity.

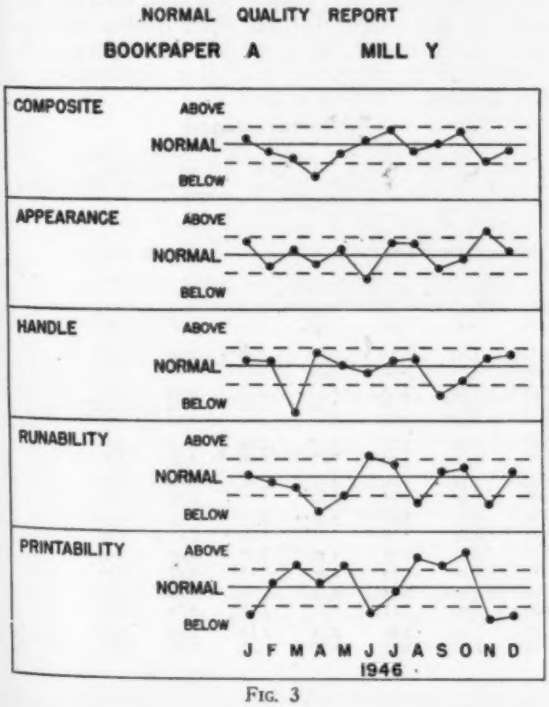

FIG. 3

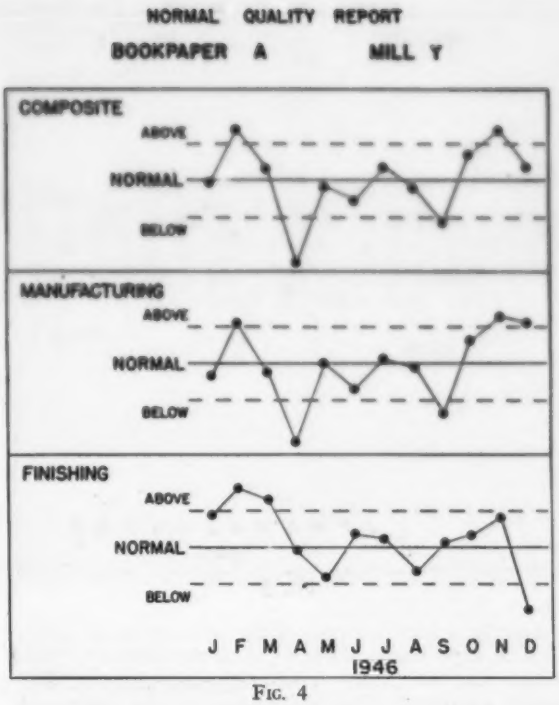

FIG. 4

When a quality weighting or survey committee attempts to define and weight defects, it is essential that manufacturing and sales representatives be present and that the judgment of the sales representative be given maximum weighting in the decisions made. It is also important that the group directly responsible for the preparation of the Normal Quality Report (in many cases the Technical Department) condenses all pertinent information and makes recommendations regarding defect weightings to the committee to facilitate rapid decisions. Such a group, particularly when inexperienced, tends to overweight the importance of various defects. Thus, a particular defect might be weighted as "A" when it was really "C," or "B" when it was really "D." If the development and use of Normal Quality is approached experimentally for a year or two and no strong claims are made for its reliability during this period, experience will point out the improper weightings and regular review (at least yearly) will permit the necessary changes to be made.

The experience gained with survy committees emphasizes the inefficiency of normal technical control and inspection systems in their evaluation of product quality from a customer viewpoint. A surprising amount of so-called quality data are obtained either for cost or inter-process control. An experienced survey committee uncovers expensive duplications, test and inspection procedures lacking customer significance, and leads the way in the development of new significant tests.

It can be argued that a survey committee making a complex judgment by a prescribed procedure is

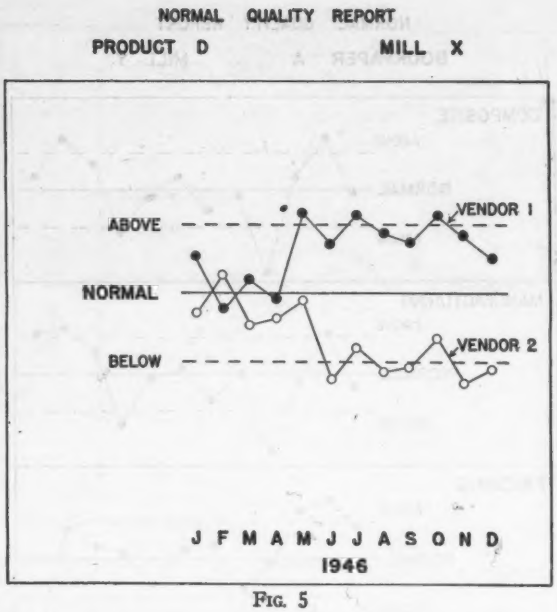

FIG. 5

worse than none because of the seriousness of error. Actual experience, however, is to the contrary. Definition and weighting errors are soon apparent and easily corrected. The advantages of one judgment made by the most qualified group extended uniformly to all products and mills gives the entire Manufacturing and Sales organizations a firmer and more accurate framework within which to make their quality decisions.

The Normal Quality Report has been found very useful in all management echelons but more particularly for top management. At lower levels, e.g., department heads, in both manufacturing and sales some variations of the Normal Quality Report have been found worthwhile. It is easily recognized that Normal Quality is a composite report comprising many components. These components may be assembled many different ways (as in cost work) to clarify portions of the total quality problem. Thus, in quality reports to operating sales staffs the Normal Quality can be broken into homogeneous customer categories as in Fig. 3.

For a mill management group the same Normal Quality Report can be subdivided into the responsibilities of operating departments as in Fig. 4.

A tabulation of individual defects (with sampling fluctuation provided for) is sometimes helpful. (See Table III.)

TABLE II

Month 1946	A Sample Size N_2	B Total Demerits Observed	C Observed Demerits per Unit B/A	D Expected Demerits per Unit (base period)	E Expected Minus Observed D — C	F $\sqrt{\frac{\Sigma W^2 d}{N_1 N_2}}$ $\frac{23.03}{\sqrt{N_2}}$	t E/F
Jan.	315	4568	14.50	13.64	—0.86	1.298	—0.66
Feb.	353	4060	11.35	13.64	+2.29	1.226	+1.87
Mar.	287	3742	13.04	13.64	+0.60	1.356	+0.44
April	315	4888	15.52	13.64	—1.88	1.298	—1.45
May	298	3578	12.01	13.64	+1.63	1.334	+1.22
June	406	6114	15.06	13.64	—1.42	1.143	—1.24
July	378	5466	14.46	13.64	—0.82	1.185	—0.69
Aug.	309	3652	11.82	13.64	+1.82	1.310	+1.39
Sept.	271	4940	18.23	13.64	—4.59	1.399	—3.28
Oct.	303	3698	12.20	13.64	+1.44	1.323	+1.09
Nov.	304	4452	14.64	13.64	—1.00	1.320	—0.76
Dec.	295	2764	9.37	13.64	+4.27	1.340	+3.19

Application Within the Industry

Many applications of Normal Quality are obvious. In addition to providing a quick, yet comprehensive, report to top management it can also be used at other management levels as already described. All products made in one mill can be pooled and the total quality performance within or between mills compared even though the products are dissimilar. The quality performance between crews or machines making the same or different products can be similarly compared. Where large quantities of purchased materials are subjected to sampling inspection, vendor quality performance can be evaluated and vendors compared with each other. (See Fig. 5.) Normal Quality can be reported yearly, monthly, weekly, and daily to good advantage depending on the management group involved and the kind of quality decisions made. Where several manufacturing groups are producing supposedly identical products, the report can be used not only to measure variation from base period but also differences between design level and base period. In modified form this method has been used to compare design, competitive and ideal quality and has also proved useful for evaluating and reporting the housekeeping, safety, and sanitation performance of mill groups.

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BOOKPAPER A — TABLE III.—PER CENT DEFECTIVE TABLE — MILL X — YEAR 1946

Quality Characteristic	Demerit Class	Expected % Defective	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Sample Size			256	324	400	289	225	441	361	256	289	441	400	361
Dirt	C	1.25	0.78	2.16	1.75	0.69	3.11**	1.82	1.94	0.78	0.69	1.36	1.75	1.11
Dirt	D	6.14	6.25	5.56	4.25	8.30	12.90**	3.40	8.31	8.20	4.50	2.04*	5.00	4.98
Holes	A	0.18	0.00	0.62	0.00	0.35	0.00	0.00	0.55	0.39	0.00	0.00	0.50	0.28
Holes	B	1.36	1.56	2.47	1.25	0.69	0.45	0.00*	1.38	1.56	2.08	1.36	3.75**	1.11
Holes	C	4.02	3.52	3.09	4.50	5.88	4.44	1.82*	3.88	3.12	6.24	4.08	6.75**	4.43
Wrinkles	B	1.69	1.56	2.16	3.50**	1.73	0.45	1.82	2.77	1.17	2.08	1.13	0.75	2.22
Wrinkles	C	5.93	6.64	4.95	10.00**	4.50	3.99	6.80	5.26	7.81	7.96	4.08	4.50	7.20
Tears	C	2.08	0.78	1.85	2.75	3.12	2.22	1.36	1.66	3.12	0.93	2.04	3.00	1.38
Tears	D	4.89	3.12	6.81	5.50	6.92	4.00	3.63	3.04	6.25	5.54	3.85	4.25	3.04
Brightness	B	0.92	0.00	0.92	1.75	1.73	0.89	1.82	3.04**	3.90**	4.15**	1.36	0.25	0.83
Brightness	C	2.45	2.74	3.09	2.00	3.80	3.11	2.26	6.10**	7.81**	8.30**	3.17	1.25	1.38
Basis Weight	C	0.61	1.17	0.00	0.50	1.37	0.45	0.45	1.11	1.56	1.39	0.23	0.50	1.11
Basis Weight	D	3.09	2.73	4.63	3.75	4.16	1.33	2.27	1.94	4.30	2.77	3.17	2.00	4.16
Opacity	B	1.45	2.34	1.54	1.25	0.69	2.66	2.27	0.55	0.39	0.35	2.04	2.25	0.83
Opacity	C	4.31	5.86	5.25	3.25	2.76	4.00	5.90	1.11*	1.12*	1.38*	4.54	5.75	4.71
Fold	C	2.69	0.43*	0.31*	3.25	4.15	1.77	2.04	3.88	2.74	3.12	2.04	1.75	6.64**
Fold	D	8.71	4.30*	4.64*	10.25	11.40	8.90	7.02	6.93	8.20	10.39	7.94	8.75	14.10**

* Quality better than base period.
** Quality poorer than base period